



**A CRITICAL ASSESSMENT OF THE IMPACTS OF MIXED
LAND-USE DEVELOPMENTS ON SOCIO-ECONOMIC
SUSTAINABILITY: A CASE STUDY OF ISIPINGO,
ETHEKWINI MUNICIPALITY**

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February 2018

A dissertation submitted in fulfilment of the requirements for the Master's Degree in Town and Regional Planning, School of Built Environment and Development Studies, Faculty of Humanities, University of KwaZulu-Natal, Durban, South Africa.

Acknowledgements

First and foremost, I would like to thank God who has massively intervened in my life and has shown me that I am able to do all things by His strength. I would significantly like to thank my supervisor, Dr. H. Magidimisha for her guidance, encouragement and constructive advice throughout this dissertation process and my academic career thus far. To those who contributed to this research in various ways, with interviews, field observations, data collection and analysis; thank you for your time, consideration and assistance. Finally, thank you to my family and friends for constantly motivating me to work hard and persevere.

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Abstract

In contemporary planning, the mixed-land use concept has been perceived as necessary to achieve sustainable human settlements across the globe. The integration of different land-use functions such as residential, commercial, recreational, and institutional in an urban environment is one of the goals of planning policies within Post-Apartheid South Africa. Prior studies have mainly mentioned the benefits of mixed land-use development towards creating sustainable environments. However, these studies have not thoroughly emphasized the challenges associated with such developments. This study attempts to critically analyze the socio-economic impact of mixed land-uses particularly in the Isipingo study area, situated within Durban, eThekweni municipality. The research methodology undertaken within the study included qualitative research. Field observations and individual interviews were conducted as part of qualitative research to investigate the perceptions of key informants, business owners and residents effected by these developments within Isipingo. The study examined residents' perception with the help of a criteria used to measure the sustainability of mixed use developments. The criteria measured whether the mixed land-use developments in Isipingo provide access to infrastructure services, access to a range of housing typologies, access to economic and job opportunities, access to public and recreational facilities, access to a range of transportation options, as well as safety and surveillance to its inhabitants. The findings of the study revealed that mixed land-use developments within Isipingo provided minimal benefits and a number of negative impacts. Residents were satisfied with how mixed land-uses provide job opportunities and housing choice. However, residents were uncomfortable with the air, land and noise pollution associated with such developments. In addition, they felt unsafe and consistently expressed how unsettled they are in Isipingo.

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List of Abbreviations

CBD	:	Central Business District.
SDF	:	Spatial Development Framework.
LED	:	Local Economic Development.
IDP	:	Integrated Development Plan.
LAP	:	Local Area Plan.
FAP	:	Functional Area Plan.
ITRUMP	:	Inner - Thekwini Regeneration and Urban Management Programme.
MDG's	:	Millennium Development Goals.
SDG's	:	Sustainable Development Goals.
NDP	:	National Development Plan.
SPLUMA	:	Spatial Planning and Land use Management Act.
IUDF	:	Integrated Urban Development Framework.
SDB	:	South Durban Basin.
SLA's	:	Service Level Agreements.
ABM	:	Area Based Management.
UMF	:	Urban Management Forum.
LUMS	:	Land use Management Scheme.

Chapter 1: Introductory Chapter

1.1 Introduction

The main aim of the research study is to determine the impact of mixed-land use developments on socio-economic sustainability. Mixed land-use developments have prevailed excessively in most parts of South Africa specifically to promote the efficient use of land and infrastructure as well as promoting sustainability. However, the ideology of mixed-use seems to oversimplify many of the issues for which they claim to have a solution (Du Plessis, 2007). Some complexities are evident in these developments and they pose potential threats to the environment and well-being of humans. Referring to the South African context, mixed land-use developments also differ in terms of quality and size. Some mixed-use developments contain high-class residential, luxury hotels, restaurants and offices. Some mixed-use developments formed organically because of apartheid planning, including medium income housing located next to industrial areas, logistics and commercial zones, which is not sustainable. So, although mixed land-use have several (presumed) benefits, negative effects might dominate behind a certain level of intensity (van Meerkerk, 2015). The proportion of the mix of compatible land-uses for sustainable development is not understood. The research examines some of the problems and benefits encountered in the Isipingo mixed land-use area, which was a result of apartheid planning and tries to explain why some planners and many developers remain uncertain of the idea of mixed land-use. While mixed-use strategies have revived many declining inner-city districts, and may add new dimensions to large Greenfield projects, not all urban residents nor all uses benefit from such changes. The researcher argues that these matters need to be addressed through intimate cooperation. The intention is to shift the way municipalities approach urban change and land-use planning and as well as improve the way development is monitored and managed.

1.2 Background of the study

The Constitution of the Republic of South Africa, 1996, is the founding document for the promotion of socio-economic sustainability in development. Section 152 (1) states the objectives of local government, which is to; (a) promote social and economic development and to; (b) promote a safe and healthy environment for all (The Republic of South Africa, 1996). This means that the government is mandated to implement policies, programmes and other initiatives necessary to ensure the progressive realisation of these objectives. The National Development Plan (NDP) is one of these policies derived from the constitution which aim to promote sustainability, growth, competitiveness and employment creation through the efficient

use of land in an attempt to reduce unemployment, poverty and income inequality within South Africa (National planning commission, 2012).

The mixed land-use concept is part of this development strategy and has been at the forefront in town planning policies and guidelines for municipalities. Mixed land-use development is the integration of different land-uses such as residential, commercial, industrial and institutional in an attempt to integrate people to areas of economic opportunity, health care, education, infrastructure services, housing choice and for the efficient use of land as part of achieving socio-economic sustainability. Most cities constantly promote the ideology of place making elements, concepts such as live, work and play in the creation of a sense of place as part of the city's future. In theoretical debates, activists of the mixed-use ideology promise social and economic gains from these developments while forgetting the complexities faced in practice on the ground. Therefore, to determine whether these developments are effective and sustainable for people, there is a need to assess and evaluate if there are in fact sustainable socio-economic gains associated with such developments. This evaluation and critical analysis of the impact of mixed-use developments has not taken place effectively. When it does take place, the evaluation often focuses too much on whether there are economic gains and job creation alone, and not on the social well-being it has on people. The health, safety and psychological well-being of people living in such spaces is not understood and has not been taken into consideration.

It is important to understand whether people are comfortable with where they are living since people can only be effective and progressive if they are living in a healthy environment that gives them that sense of place and comfort. The mental state of a person is thus important for their prosperity in the economy and environment. For example, if a student is living in a harmful environment that is polluted and unsafe, it is difficult for them to do well at school, ultimately hindering their chances of getting a job one day. Therefore, a more critical and qualitative analysis of the socio-economic impact of mixed land-use developments is thus needed. This is the primary aim and purpose of this research. Mixed land-use developments have in the past formed without any proper planning and consideration of its surroundings. The apartheid era is responsible for this matter, and has ultimately led to the degradation of the environment as well as deteriorating streets. It is therefore important to understand the main causes of the formation of these developments, as well as the benefits and challenges of such developments on the ground. A qualitative research is thus needed, and has been chosen for this study. Additionally, in order to determine the socio-economic sustainability of mixed land

use developments, the area should include access to infrastructure services, access to economic and job opportunities, access to public and recreational facilities, access to housing choice, access to a range of transport systems, as well as safety and surveillance.

The motivation for this study is borne from the fact that since the start of post-apartheid planning policies, there has been limited research pertaining to the evaluation and analysis of the outcome of planning projects, particularly projects promoting the mixing of different land-uses and the impact it has on people. Such research is significant if we hope to enable more than just economic growth. There are many factors to consider when aiming to achieve socio-economic sustainability. The mixed land-use developments in Isipingo situated in Durban, formed during the apartheid era and the area has densified organically over time. It therefore serves as an excellent case study to begin to understand the socio-economic impact of mixed land-use developments on the ground.

1.3 Problem Statement

Based on observations, the study area appears to be degenerating in terms of its physical appearance due to misuse of sites, dilapidated buildings, and littered streets which make it unappealing (Bhoora, 2009). Existing public amenities in the Isipingo CBD are largely informal and unstructured. Existing conflicts in the CBD are mainly between vehicular and pedestrian movement and informal market activities. The public environment in the CBD is inadequate and deteriorating and insufficient accommodation is made for public facilities and open spaces. There is an informal incursion of logistics, commercial and business into surrounding residential development (Iliso KZN in association with C.S. Roebuck, 2004:7). The main causes of these problems are related to apartheid planning. The existing mixed land-uses grew organically with no proper planning. As a result, middle-income housing is found opposite logistic zones, scrab yards and light industry areas which is socially and environmentally unsustainable. These effects of mixed land-use development on social life have not been studied. A critical analysis of the current conditions of Isipingo study area offers a clear understanding and reality of mixed land-uses on the ground, including the nature of its associated problems and benefits.

1.4 Research Aim and Objectives

1.4.1 Aim

To determine the impacts of mixed land-use developments on socio-economic sustainability in Isipingo.

1.4.2 Objectives

- To determine the main factors that influenced the formation of the mixed land-use area in Isipingo.
- To identify the challenges associated with the mixed-use developments in Isipingo.
- To identify the benefits related to the mixed-use development in Isipingo.
- To examine the extent to which the eThekweni municipality monitors and sustains the area in Isipingo.

1.5 The main research question and subsidiary questions

1.5.1 Main research question

What are the impacts of mixed land-use developments on socio-economic sustainability in Isipingo?

1.5.2 Subsidiary research questions

- What are the main factors that influenced the formation of the mixed land-use area in Isipingo?
- What are the challenges associated with the mixed-use developments in Isipingo?
- What are the main benefits related with mixed-use developments in Isipingo?
- To what extent is the eThekweni municipality playing its role in maintaining and sustaining the Isipingo area?

1.6 Rational of study

The mixed land-use developments in Isipingo have been seen as socially unsustainable due to congestion, urban decay and the industries are too close to people's homes which ultimately neglects the public realm of the area. The industries and logistics zones within these mixed land-use developments also harm the environment causing air, noise, and land pollution, which eventually effects the psychological well-being of people within the area. Therefore, there is a need for the eThekweni municipality's SDF (Spatial Development Framework) to incorporate a revitalization plan for the Isipingo area. The research to be conducted is relevant in the sense

that it will assist public sector in developing policies and a specific criterion to control the implementation of mixed land-use developments since it does not apply everywhere.

This point out that the concept is challenging to implement. This short dissertation is a systematic study of the mixed land-use concept and its application in South African cities, particularly the Isipingo study area. The purpose would be for the researcher to gain an in-depth understanding of the application of the mixed land-use concept and its general impacts on human life. In addition, the dissertation also adds to the field of knowledge in contemporary spatial planning issues in practice and will ultimately add to decision making in policy formulation in sustainable development. In simple terms, the study emphasizes mainly on experiential knowledge and seeks to understand the effect of mixed land-use from the perspective of the people who use the space, which will eventually put an end to the uncertainty, in which some planners have on mixed-use developments.

1.7 Research Methodology

According to Babbie and Mouton (2002:74), a research method is an outline of the way a specific researcher would plan to implement the research process. It is an overall plan put in place to conduct a research study. Nevertheless, the research study was conducted within a qualitative research method. Qualitative methods generally aim to understand the experiences and attitudes of people and allows the interaction between the researcher and the study participants. Qualitative research is regularly flexible since it allows more naturalness and adaptation which ultimately allows collaboration between the sampled participants and the researcher (Natasha et al, 2005). Qualitative approaches mainly ask open-ended questions that are not really worded in the very same way for each participant. This enables freedom to various participants as they can answer in their own way, and these reactions tend to be more intricate than simply yes or no answers (Natasha et al, 2005). The main reason for the use of qualitative research within this study was to allow direct investigation of the natural social setting of the mixed-use area in Isipingo and its people, to study the impact of the mixed-use developments on the livelihoods of members within their natural location in Isipingo and to develop themes out of field observations when analyzing the collected data.

1.8 Data Sources

1.8.1 Primary data

The primary data methods that were used within the study are; individual semi-structured, in-depth interviews, and non-participant observations.

a) Research Techniques

- Semi-structured interviews with Key informants: In this research, semi-structured interviews were conducted with the municipal officials of eThekweni municipality, the provincial government (KZN COGTA) and one consulting company. The questions that the informants had to answer, were created using the research questions of the dissertation, which were further broken down into 10 detailed questions. The key informants that were selected and interviewed included the; Head of Development Planning Environment and Management which includes the Land-use Management section as well as a professional Town and Regional Planner from the eThekweni Metro-Municipality working in the Spatial Planning Unit. A Chief Town and Regional Planner from KZN COGTA representing the province and a Director of Planning from Iyer Urban Design consulting company were interviewed. For the public officials, the same questions were asked; however, for the private sector; a few questions were slightly different since they focused more on the technical side. These key informants were selected in order to identify the main factors that influenced the spatial structure of the Isipingo mixed-use area to establish the challenges and benefits of mixed land-use development from a professional's point of view and to find out the extent to which the area is being monitored and managed.
- Semi-structured interviews with informal traders and business owners: The business owners were selected to be interviewed due to their knowledge and important insight on the area based on their daily dealings with the study area. In total, six business owners were interviewed. They were interviewed to mainly determine factors that led to the formation of mixed land-use developments since business and commercial areas are part and parcel of the formation of mixed-use development. They were crucial in answering questions as to what mainly attracts businesses and why business reside within mixed-use areas, (see Appendix E: interview questions).
- In-depth interviews with Residents of Isipingo: To identify the socio-economic impacts of the mixed-uses in Isipingo, in-depth interviews were done with the residents of Isipingo who live within the mixed-use area. This was done to attain first-hand information on challenges and benefits of living within these mixed-use developments in Isipingo. The residents were crucial since they provided detailed answers on what socio-economic challenges exist and their implications for the future development of Isipingo, (See Appendix B: Residents interview questions).

- Observations: In order to attain accurate information in a particular case study, observations are key (Cohen and Manion, 2002). There are two broad types of observations namely non-participant and participant observation. Within participatory observations, a researcher embarks and forms part of the residents behavior or activities of those they observe since they participate in their activities (Bless & Higgson-Smith, 1995). In addition, they engage into the culture of the groups (Yin, 2012). Non-participatory observation is when the researcher sets him or herself completely apart from that observed. The researcher is somewhat like a spectator at an interest, but not part of it (Cohen and Manion, 1980). Within the data collection process of this study, non-participatory observations were undertaken. This was done in order to determine the situational analysis and status quo of the study area for instance, analysis of the physical environment such as the land-use patterns, local economic development (LED) etc. These observations were done while being on the field for a week.

The Data was also collected through taking field notes, transcribing based on what the researcher saw, heard or sensed. An observation checklist was created by the researcher (see appendix F) for accurate observations to be captured. Within the checklist, 10 items were listed and each item was observed each day for 5 days. The main purpose for the checklist was to observe the different land-uses and activities occurring in the Isipingo mixed-use area daily that would further be evaluated. After each day of observation, a tick was marked on the checklist for that respective item observed. This provided the researcher enough data for further analysis. In the process of observations, mechanical devices such as a video camera and phone were used to record and take photographs as part of depicting the observations on the field.

- Mapping: The locality map, environmental map and social facilities map of Isipingo were created by the researcher using ArcGIS 10.3 programme which was installed on a secure computer. Other maps within the dissertation, specifically of case studies in other countries were created using google earth and were snipped as images as well as properly referenced.

1.8.2 Secondary data

Secondary data was also used within the research, more specifically to provide information with past, current knowledge, and critiques of the subject matter using journals, books, reports, and government documents.

a) Research Techniques

- Books & Journals: Books and journals were used to attain information regarding the literature review and theoretical framework of the research. This assisted the researcher to recognize and compile knowledge produced by different authors regarding mixed-land use developments in past and contemporary planning. The debates from these authors also helped the researcher to establish conclusions as to how scholars perceive the mixed land-use concept. Relevant published dissertations relating to mixed-land use were also accessed online to assist the researcher on further strengthening the research study.
- Government documents/Reports: The eThekweni Integrated Development Plan (IDP) and Spatial Development Framework (SDF) was used to attain the status quo of the study area, for instance; the use of Demographic data, economic trends, and socio-economic status of Isipingo. The 2017/18 SDF was also used to understand the current and future plans aimed at revitalizing the study area.

1.9 Sampling Procedure

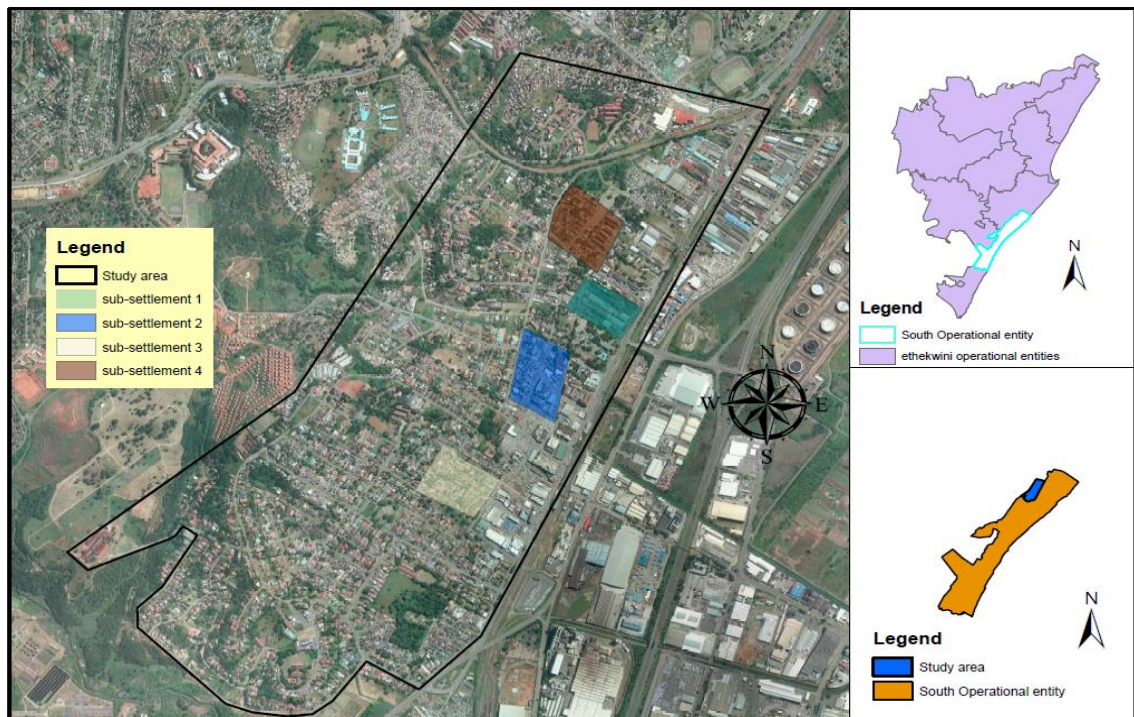
Within this research, a purposive sampling method was used. A purposive sampling is a non-probability sampling method which allows the researcher to use the research aims to select the sample (Silverman, 2005). Similarly, Silverman (2005) also notes that purposive sampling allows the investigator to choose a sample based on the participants' knowledge of some feature interested in. Residents interviewed from Isipingo were chosen according to their location within the area. Since a purposive sampling method was applied, community members that are located within and around the mixed land-use were interviewed accordingly as they are mostly affected. According to Census 2011 data, the population totals to 6291 people within Isipingo hills. From these figures, 28 residents including business owners located within that area were selected since they are located closer to the mixed-use areas. The study area was grouped into four (4) sub-settlements (Refer to figure 1). In each sub-settlement, the researcher selected five (5) members who are 23 years and above and two (2) business owners within that same sub-settlement, and who have lived in the area for over 2 years. The total sample size was worked out to be 32 subjects including the key informants. Four (4) key informants were selected because they have rich knowledge regarding the mixed-land use developments in Isipingo. The key informants interviewed are illustrated below:

- a) A Chief Town and Regional Planner from Department of Cooperative Governments and Traditional Affairs (KZN COGTA) who assist the municipality to produce legally

compliant SDFs and Land-use schemes was selected and interviewed based on the fact that he is a resident from Isipingo and has been involved in a number of densification projects that promoted mixed-land use development within municipal jurisdiction.

- b) A private Sector Planner (Director of Planning) from Iyer Urban Design was interviewed based on the fact that the company was appointed by the municipality to produce a Precinct plan for the development of Isipingo. Therefore, the director has rich knowledge of the situational context and interventions that occurred in the study area as well as future proposals.
- c) The Head of Development Planning Environment and Management which includes Land-use Management from eThekweni Metro-Municipality was interviewed based on the fact that he and other executive partners govern the area and have rich knowledge of the whole municipal jurisdiction. A registered Professional Town Planner from the municipality was also interviewed since he is involved in the process of compiling and reviewing the Southern Spatial Development Plan (SSDP) of the municipality.

Figure 1: Sampled Settlements



Source: Author (May 2017)

1.10 Data Analysis

The data collected within the field work was analyzed in a form of narrative reports for each participant interviewed. Thereafter, narrative reports were consolidated into one report that

provided results which answered the research questions of the dissertation. Within the report, direct quotes from the participants interviewed were extracted and provided to support statements made in the study. This was accurately extracted since the responses from the interviews were recorded and written down. Sub-themes were created using the research objectives of the dissertation, and the findings from the local residents were measured against a criterion which is used to determine the benefits and disadvantages of mixed land-use developments. This criterion was extracted from the literature review within chapter 3 which is a tool to measure the sustainability of mixed land-use developments.

1.11 Limitations of the Study

The limitations experienced within the data collection process were that interview schedules had to be moved in order to accommodate the key informants. This was due to the fact that they were frequently busy and not available in the office at crucial moments. In some instances, the researcher had to make numerous trips and to extract some information from secondary sources. Another issue that occurred was getting people to talk openly. Some residents felt uncomfortable and did not want to participate due to not trusting the interview process. Due to the high level of crime within Isipingo, people did not know what to expect from anyone. As a result, some residents did not provide valid answers. Limitations such as weather conditions also influenced the data collection process. During the month of interviews and observations on the field, there were instances where storms and flooding occurred on a large scale, Isipingo were one of the areas which experienced the heavy storms and led to participants not coming out the house. This also led to informal businesses evacuating away from the area sampled by the researcher.

1.12 Structure of the Dissertation

Chapter 1: Introduction and Research Methodology

The introduction is based on the research problem and motivation to critically assess the impacts of mixed land-use developments on socio-economic sustainability within Isipingo, eThekweni Municipality. The Chapter provides a general background of the research and includes the main aim and objectives which the dissertation seeks to achieve. The chapter further provides the framework of research as a whole and indicates its purpose. In addition, the chapter discusses the research methodology describing the way the research was conducted, methods of primary and secondary data collection, sampling procedure and data analysis.

Chapter 2: Theoretical Framework and Conceptual Framework

The theoretical framework outlines the theories that are relevant and applicable to the study. These include the postmodernism planning theory, neoliberalism theory of development and the location theory. The chapter also depicts the conceptual framework which is the part of dissertation that defines and explains key concepts used in the study. The concepts that inform the study are socio-economic sustainability, mixed land-use development, new urbanism, spatial development framework and urban sprawl.

Chapter 3: Literature Review and Precedent studies

The literature review will include relevant bodies of literature that will then be explained, including their relevance to the study, the need for research and its contribution towards already existing work is also explained. Precedent studies are also included in this chapter and will explain international experiences which include developed and developing countries and national experiences relating to mixed-use developments in South Africa.

Chapter 4: Case study

The main purpose of this chapter is to provide an overview of the study area. The Isipingo area situated in the South Durban Basin is a selected case study which will be analysed within the context of its location and land-use functionality.

Chapter 5: Research Findings and Analysis

The data gathered from the field is analysed in this chapter. The responses and results from the interviews are analysed. With the data interpreted from the findings, conclusions are made.

Chapter 6: Summary of Findings, Conclusion and Recommendations

This chapter revisits the research question and hypothesis, and provides recommendations that are influenced by the findings obtained from fieldwork.

Chapter 2: Theoretical and Conceptual Framework

2.1 Introduction

This chapter consists of two components; the theoretical and conceptual framework for this study. The theories and concepts were selected due to their relevance to shape the discussion of this dissertation. In addition, the selected theories will enable the research to have a theoretical reliability and be imbedded on what is generally known about the ideas that are related to this dissertation. The theories to be evaluated as part of assessing the impacts of mixed land-use developments on socio-economic sustainability include the neoliberalism planning theory of development which describes the functionality of capitalism as form to enhance mixed land-use developments; postmodernism planning theory which explains the foundations and roots of mixed land-use as an approach to revitalize the errors of modernist planning; and von Thunen's location theory which analyses the factors which determine the location of investments and forms the basis for the general understanding of mixed land-use developments. The conceptual framework then ends of the chapter by providing an introduction on key concepts that are relevant to the context of this study.

2.1.1 Postmodernism Planning Theory

Postmodernism is a late 20th century movement in the arts, architecture, and criticism that was a departure from modernism (Grabow & Heskin, 1973). David Antin, Charles Olson, John Cage, and the Black Mountain College School of poetry and the arts were integral scholars in the exposition of postmodernism at the time. Postmodernism theory is a broad and somewhat uncertain belief system tied to the philosophical and cultural reaction to the convictions of modernism. Modernism theory arose from wide-scale transformation in Western society with changes brought by industrialisation and industrial capitalism in the 19th century and early 20th century. It attempted to improve society through the pursuit of knowledge and objective science (Hobson, 1999). According to Eagleton, (1985), modernism was achieved and identified with the use of modern science, art, technology, economics, politics and required the refusal of 'irrational' tradition, myth and religion. In other words, modernists rejected the belief that morality and organized religion provided the means for social evolution and the betterment of man but science, human knowledge and law would produce absolute truths in development. Therefore, in more simple terms, the postmodernism theory emerged in order to redress these imperfections caused by modernist theory.

2.1.1.1 The emergence and spread of Postmodernism theory in Planning

The field of planning today is suspended between the paradigm of modernity and post modernity with planning practitioners and theorists increasingly drifting towards the two opposing schools. Planning emerged as a field from the need to address social problems related to massive immigration and lack of control over the built environment (Beauregard, 1991). Due to the chaos and inefficiency created by capitalists at the height of the industrial revolution in the nineteenth and early twentieth centuries, the modernist movement in planning emerged as a tool that was meant to mediate between the capitalist selfish motives of accumulation and people interest. But the failures of certain programs that sprang from early modernist planning theory called into question the ability of planners to understand and coordinate an increasingly complex built environment. These failures marked a departure from modernist planning causing the birth of post-modernist planning. For example, affordable housing is a planning issue that emerged from the modernist planning paradigm, but has been increasingly folded into post-modern planning. The post-modern view of planning is as a supplement to the private market, filling in for shortcomings in the needs of the public. With planners increasingly working in a public and private role in the post-modern planning era, it is their role to serve the public interest. The post-modern problem has caused planning theorists to have another look at many of the key thoughts of modernist planning.

a) The emergence of modernism in planning

Urban planning may be as old as humanity but it was the emergence of chaotic and polluted cities of Western Europe's Industrial Revolution that caused radical ideas of urban management. In response to these issues arising from industrial revolution, the first of these concepts was termed "modernist planning". Modernism in planning also called 'modernist planning' refers to the approach to urban planning that developed in the post-1850 urban industrial period in Western Europe and other advanced capitalist countries. While there are many variations of modernist planning, it generally involves a particular process of producing plans which are 'top down' and expert led, and regarded as merely a function of government where there was a particular form of plan generally known as a master plan, controlled by land-use regulatory systems and the promotion of a particular urban form. Urban modernism was characterized by mono-functional use areas, low-built densities, movement systems based on the private car, tower blocks and quantities of green open space. Urbanisation, associated with the rise of industrial capitalism created a new form of social organisation with connected problems. This provided both an undesirable situation which modernists could reject, but also desirable features to adapt for a new utopian society.

Modernist planning aimed to improve the urban environment, improving conditions for the urban poor and creating a new urban society through the power of knowledge from experts and rejecting traditional and cultural ideas. Thus, one way in which modernist planning strove to improve society was by reducing urban inequalities and creating more socially just urban areas where the 'good life' could be shared by all (Beauregard, 1996; Smith, 1994). The modernist planning concept was largely influenced by two sets of factors which were; technical and ideological considerations. The first set of factors considered for planning's effort to deal with the negative externalities of industrialization and urbanization. In this regard, planning and health officials collaborated to control the spreadable and deadly diseases such as cholera and other epidemics. Accordingly, planning and public health were linked with the English sanitary movement of the 1840s. Urban planners, most of whom were civil engineers and health professionals were required to design schemes to improve sanitation conditions in residential areas and work places. Other efforts aimed to separate land-use activities, especially residential from industrial zones. Yet others were designed to separate those infected by contagious diseases from the rest of the population.

The second set of factors saw planning as a tool for achieving political and ideological goals of the state or ruling class. In this regard, the 20th-century developments in European urban planning were characterized in a manner that a political, social, cultural, professional and technical response to conditions of the industrial revolution. Technical and ideological factors jointly produced a number of urban 'visions' that were to shape the objectives and forms of planning, which in turn showed a remarkable resilience through the 20th century. In the 20th century, planning was characterized in three essential components. The first was that it was seen as an activity in the physical planning and design of human settlements while responding to social, economic and political matters, it was not seen as the task of planning to intervene in these matters. Planning was therefore seen as a technical activity to be carried out by trained experts without the involvement of politicians or communities. Secondly, planning involved the design of master plans, or layout plans, showing a detailed view of the built form of a city once it achieved its vision. Thirdly, planning was seen as a normative task that should be driven by a particular set of values which described the ideal living environment and, in the view of planners, reflected the 'public good'. Broadly, these values were to be specific to the time and place in which they were formulated. For example, early British town planning was strongly influenced by the radical and utopian socialism of the time and a longing for the village life of medieval England.

b) The Transition from modernist planning theory to postmodernism planning theory

The failures of the modernist thought in planning lead to the birth and transition to the post-modern thought in planning. The noticeable issue with modernist planning is that it entirely failed to comply with the way of life and most of the population in rapidly growing, and largely poor and informal cities, and thus directly contributes to social and spatial marginalization or exclusion. Grabow and Heskin (1973) state that modern planning is exclusive in that it sets the ostensible “planner,” the rationally comprehensive advisor, apart from the world he or she is to “plan”. For example, in a study of nine cities in Africa, Asia and Latin America, it was found that most had planning and building standards that were unsuited to the poor (Burayidi, 2000). In addition, it failed to consider the important problems of 21st-century cities (e.g. climate change, oil depletion, food insecurity and informality), and fails to acknowledge the need to involve communities and other stakeholders in the planning and management of urban areas. Modernist planning regulatory features emerging from the Rational Comprehensive model such as land-use zoning and building regulations have usually called for people to comply with certain forms of land tenure, building regulations, building forms and construction materials which usually representing European building technologies and imported materials. Complying with these requirements brings significant costs and is usually complex and time consuming (Allmendinger, 2002). The official minimum plot size in many developing countries is considerably higher than the size of plots regularly occupied in informal settlements and costs more than what many households can afford. Those inhabitants affected by such unrealistic standards are the urban poor and low-income households in that they are left out in the decision-making process, ending up in unplanned and un-serviced areas where poverty is prevalent.

Another criticism of the modernist planning approach, which is characteristic of master plans, is that they are usually drawn up by experts as end-state blueprint plans, and without consultation with communities (Grabow & Heskin, 1973). Architects of the master plans produced were usually not based in developing countries and not trained there so they had little understanding of the dynamics of poverty and the nature of urbanization in cities in developing countries, or alternatively referred to the older modernist belief that these cities would soon catch up economically with those in developed countries. A further problem with physical master plans prepared by outside experts is that neither the plan nor the process of implementing fits in the local institutional culture.

The urban modernist spatial and architectural forms that are usually supported by modernist planning tend to strengthen spatial and social exclusion, and produce cities which are not environmentally sustainable. In many cities, modernization projects as mentioned earlier in paper involved the demolition of mixed-use, older, historic areas that were well suited to the accommodation of a largely poor and relatively immobile population. These projects segregated small traders and working-class households, usually to unfavourable peripheral locations.

Modernist cities were planned around car-based movement systems which ensure that those with a car have high levels of mobility and accessibility, while those without cars, the majority in developing cities, often found themselves situated in peripheral settlements, unable to access public facilities and work opportunities. Low-income households, which have usually been segregated to cheaper land on the urban periphery, consequently found themselves having to pay huge transport costs if they wanted to travel to public facilities or jobs. Mono-functional zoning principles emerging from modernist planning never considered or accommodated the realities of urban life anywhere in the world. The separation of income groups in many cities through plot size, or density, zoning is also a major drawback for poorer groups. Those who survive from the informal sector (the majority in developing cities) find themselves trapped in bounded areas with low purchasing power. The displacement of the poor to areas of job opportunity has also consequently led to increased levels of crime in poor areas since some of them are left with no other choice to earn a living. High crime rates cause poorer areas to have of low property values and limited private sector investment, and, thus, greater poverty and deprivation.

The problems associated with modernist planning discussed above, and the changing urban, economic and environmental contexts, led to the emergence of postmodernist planning with more innovative or contemporary approaches to urban planning. The major approaches have aimed to fix and redress the failures of the rational planning model which emerged from modernist planning concepts, these approaches are; strategic planning, advocacy planning, radical planning, communicative planning and new urbanism. Advocacy planning approach created opportunities for the expression of diverse and conflicting social values and interests. Like lawyers, planners would represent the public and serve as advocates for client groups from communities who want their needs and wants pursued (Davidoff, 1965). These planners would be responsible to their clients and would seek to express their respective clients' points of view so that the best possible plan would emerge. The final plan would be formed through

democratic debate over choices prepared by the different groups. Strategic planning as a theoretical response to the modernist planning approach emerged during the 1980s and 1990s in Western Europe specifically in response to the earlier disappointments with master planning, but also because of the awareness that the project-based approach to urban development was equally problematic in the absence of a broader and long-term spatial framework.

The radical planning approach was another postmodern planning response to challenge the rational comprehensive model of modern planning. It emerged during the 1970s and 1980s based on systems change and the awareness of a decentralized society that facilitates human development in the context of an ecological ethic by social experimentation (Grabow & Heskin, 1973). Another postmodern approach was the communicative planning technique which emerged in the 1980s and 1990s as a theoretical response to the critics of the enlightenment-modernist planning approach (Healey, 1996). This theoretical response was developed as one of the leading planning approaches during past decades and views planning as a form of communicative action. It seeks a political arena in which decision-making is made by all the people involved through shared issues. Lastly, new urbanism emerged as a response to the failures of modernist planning approaches that segregated the low-income groups to cheaper land on the urban periphery, and therefore consequently socially excluding them from public facilities and job opportunities. It evolved as a response to promote environmentally friendly habits by creating walkable neighbourhoods containing a wide range of housing and job types.

2.1.1.2 The Postmodern planning theory as a platform for mixed land-use development

Postmodernism is a rejection of individuality with the notion that planning could be comprehensive, widely applied regardless of context, and rational. It departs radically from modernist conceptions of how to regard space. Whilst modernism is based on rationalism and universal truths which are attained through scientific and technological thought, postmodernism purports to an extreme of multivisionary thinking. Harvey (1990) states that urban design in postmodern times aimed to be sensitive to local traditions, local histories, and particular wants and needs thus generating specialized architectural forms that may range from personalized spaces through traditional monumentality. In response to the associated failures of modernist planning, the postmodernism theory emerged with more innovative or contemporary approaches to urban planning. One of the approaches from postmodernism theory, which aimed at revitalizing the modernist theory, incorporated new urbanism and

mixed-land use as a tool to revive segregated settlements. In the context of South Africa, apartheid planning was a modernism tool to segregate settlements based on race.

The legacy of apartheid in South Africa provided a framework for centralised spatial planning creating spatial segregation, a complex system enforced by a wide range of complex overlapping legislations. These apartheid cities were built through separate and internalised neighbourhoods for different groups, separated by buffer-strips in the form of green open space, rapid transit routes or light industry. This modernist model was regarded as unsustainable because it promoted private car usage and long travel distances to places of opportunity and scarce urban land. In response to these issues, the Development and Facilitation Act (DFA) 1995 and the Spatial Planning and Land Use Management Act No 6 of 2013 (SPLUMA) that draws its insight from Agenda 21, promoted the principles of new urbanism as a tool to promote mixed land uses, high density residential typologies, the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources (Landman 2003: 5). Mixed land-use development was seen as a significant tool in providing a comprehensive approach to planning. These projects involved community participation, thus rejecting the notion of modernist planning.

2.1.1.3 The shortcomings and lessons from Postmodernism planning theory

Frederick Jamieson argued that Postmodernism is the 'cultural logic of late capitalism' in the same way as modernist social theories are products of modernity so post-modernism is a product of advanced capitalism. Many critics of postmodern planning theory often revolve around its translation into practical activity. For example, Gleeson (2000) argues that postmodernism has not provided a framework that could be applied meaningfully at the social scale to cities, regions and nations. Noam Chomsky also argued that postmodernism is meaningless because it adds nothing to analytical or empirical knowledge. Félix Guattari mentions that the theory rejected its theoretical assumptions by arguing that the structuralist and postmodernist visions of the world were not flexible enough to seek explanations in psychological, social and environmental domains at the same time (Eagleton, 1985).

One of the important lessons emerging from the postmodernist style of planning is the significance of resident or public opinion. Planning is a diverse field which requires a comprehensive approach to solving problems. It is impossible for professionals alone to solve socio-economic problems which do not affect them; the community is needed in decision making about issues affecting them. Professionals have little knowledge of real 'urban' problems characteristic of slums, overcrowding, deteriorated infrastructure, pollution and

disease among others (Irving 1993). However, the people affected by these issues have the real knowledge and awareness of the causes. Therefore, the collaboration and cooperation between professionals and beneficiaries is crucial in achieving the sustainability dream within contemporary planning.

2.1.2 Neoliberalism planning theory of development

2.1.2.1 The evolution and Trends of neoliberalism theory

According to Harvey (1990), neoliberalism is the intensification of the influence and dominance of capital; it is the promotion of capitalism as a mode of production. It is also a scheme to strengthen, restore, or, in some cases, constitute a new power of economic elites. Neoliberalism first gained widespread importance during the late 1970s and early 1980s as a strategic political response to the sustained global recession of the preceding decade championed by the World Bank (Brenner & Theodore, 2003). The rise of neoliberalism as a widespread economic and political strategy was associated with the neoliberal regime shift in Britain and the US in the late 1970s. This was followed by similar shifts in Canada, New Zealand, and Australia, with New Zealand showing in many ways, the least impure form of neoliberalism. Neoliberalism emerged as an ideological response to the crisis of the Keynesian welfare state which was caused by the generalized capitalist crisis associated with the end of the postwar reconstruction boom and was brought to a head by the escalating cost of the US war against Vietnam at the beginning of the 1970s (Clarke, 1988). The crisis established itself in a slowing of the pace of global capitalist accumulation alongside escalating inflation and a growing difficulty of financing government budget deficits which forced governments to impose restrictive monetary policies and cut state expenditure plans. What was seen as a mark of the abject failure of Keynesianism was acclaimed as a positive virtue by neoliberals. As a political approach, the theory seeks to reduce the normal or routine forms of state intervention associated with the Keynesian welfare national state as well as the crisis-induced forms of intervention aimed at managing and displacing government dependency and their modes of regulation (Jessons, 2002). It also involves enhanced state intervention to promote new forms of governance that are more appropriate to a market-driven globalizing economy. This typically involves the selective transfer of state capacities as intervention is restructured in the hope of securing conditions for a well operating world market and to promote supply side competitiveness on various scales above and below the national level. The public sector and private sector may gain a key role as strategic partners of business in this changed context. A shift also occurs from government to market forces and partnership-based forms of governance,

reflecting the neoliberal belief in the probability of state failure and the need to involve relevant stakeholders in supply-side policies.

2.1.2.2 Neoliberalism vs Planning as an institute of economic development

The neoliberalism theory in planning generally requires for the reduction of state regulation in the use of land and increase in economic transactions within land uses. It is the promotion of commercial spaces within cities which pressures residential as well as green open spaces located in areas of opportunity to accommodate formal or informal trade productivity. For example, the neoliberal planning approach rather prefers for residential spaces to be transformed to economic hubs including businesses, stores and other spaces promoting free market, ultimately neglecting social aspects, and environmental aspects within a city (Jessop, 2002). Within the neoliberal planning theory, a city's social organization, spatial development and mode of governance functions through the free market ideology where economic development springs from individual initiative and unrestrained markets in land, labor and money. The government takes a back seat, but facilitates development. Furthermore, the basis of neoliberal ideology in planning is the belief that open competitive, and unregulated markets, liberated from all forms of state interference, and represents the optimal mechanism for economic development.

The relationship between the private sector and the state cannot be underestimated simply due to the important role they play in the restructuring of the urban environment. Public sector functions have been more or less limited to facilitation and control, the role of the state in this framework, was to be limited to capital injection and provision of land as well as infrastructure whilst the private sector undertakes activities that revolve on capital investments (Fraser and Kick, 2007: 2358). For example, within the South African context, the inner Thekwini Regeneration and Urban Management Programme (iTRUMP) is a state initiated planning programme for urban renewal projects. However, these projects are driven and implemented by private sector in order to revitalize inner city degradation through attracting private investment. Without doubt, the action of capitalism has been the emergence of urban spaces that accommodate rapid production, exchange and consumption; they are built, destroyed and rebuilt to allow for a more efficient circulation of capital (Harvey, 1973; Waley, 2007). Cities have become sites for the production of imagination and the cultivation of spectacle (Bridge and Watson, 2000: 107). The result of these imaginations and processes, coupled with the intent of global symbolism has created urban terrains of hyper-reality, socio-physically disaggregated, exclusionary, privatised and commodified (Douglass and Huang, 2007).

Isipingo mixed-use area, in many respects, portrays a neoliberal form of urban planning as a landscape representing the intensity of informal and formal economic activity without any proper state regulation, which is symbolic of a neo-liberalist culture.

2.1.2.3 The Neoliberal perspective in urban planning and mixed land-use developments

Cities are certainly considered as engines of economic growth; this is because a city comprises of mixed land-use developments which act as key centers of economic, political, and social innovation, and key actors in promoting and associating international competitiveness. Moreover, with the transition to a postmodern era, the rise of the knowledge-driven economy, and the increasing importance of the information society with its requirements for lifelong learning, cities are even more important drivers for innovation and competitiveness than before. Neoliberalism planning theory forms the basis for this and provides a framework within which the roots of mixed-use developments can be examined. In the South African context, the Spatial Development Framework (SDF) was established by the public sector to promote the prioritization of nodes and corridors that consist of mixed-use developments which are then driven and implemented by the service providers (private sector). Thus, capitalism is largely existent in mixed land-use areas where free market, informal and formal trade is intensified. Firms situated in mixed land-use nodes accumulate large profits; this also contributes to the growth of the urban economy by providing more jobs in a capitalist manner. Mixed-use developments are profit-seeking developments in which the state enables the private sector to take control in development through private-public partnership which is a typical inherent of neoliberalism culture in urban planning. It can therefore be acknowledged that the mixing of land-uses was established as a neoliberal strategy to improve the market economy and promote economic growth. The mixed-use area in Isipingo grew organically through intense informal and formal economic processes, including free market where informal trade was dominant, thus limiting state intervention. In simple terms, neoliberalism planning theory is the basis in which the mixing of land-uses occurs.

2.1.2.4 The Criticism and Lessons from the Neoliberal planning theory

In recent decades, one of the consequences of the rule of neoliberal planning theory and "market fundamentalism" was the neglect of planning at the macro and micro level. Hayek & Friedman (2009) emphasis on the fact that the neo-liberal theory in planning (also known as microeconomic planning) has the magical power of auto-regulation and the boost of economic processes without considering the compliance to planning regulations such as land use schemes that control the use of land. Neoliberalism theory in planning aims to increase the market

productivity in a city driven by the private sector irrespective of planning control measures to control the use of land. Hence, organic mixed land-use development, as mentioned above is caused by the neoliberal planning approach whereby the main priority is increasing economic productivity, informal trade, and free trade regardless of any environmental considerations or social impact on the environment. In simple terms, neoliberalism planning theory neglects the conservation of the built and natural environment.

The usefulness of microeconomic planning should not be disputed. Serious discussions about the justification of macroeconomic planning should be initiated (Mesaric, 2012). However, if one ignores the ideological reasons, then there are no arguments for disputing the need for planning in those areas of economic and social life, in which the market mechanism obviously cannot serve as the main or only driver and controller of actions. Actions such as in the case of transport infrastructure, energy development, water regime, preservation of natural environment, regional and urban development, not to mention the social activities such as education, public health, social services and a large part of scientific and technological development. All these activities require the determination of short, medium and long-term goals, creation of desired dynamics of their development, predicting the necessary means and methods of their realization and in the end, which is often ignored and what is of crucial importance, their alignment with each other, because all these activities are in interactive relationship.

Therefore, planning must be holistic in a sense that it includes not only economic activities but also social, institutional, demographic, environmental and other forms. Planning in the broadest sense should be understood as a method of any rational decision-making process. Specifically, every individual and every organization before making any important decision in a rational way should first clearly define the objectives to be achieved at some future time, then consider several possible alternatives to achieve these goals, assess necessary means, methods, and implications of each alternative solution and finally, by comparing these alternatives, decide on the optimal variant, which, with the least investment of resources gives the highest score.

2.1.3. Location theory

2.1.3.1 Background and applicability of Location theory in planning

Within the 19th century, the location theory became an essential part of regional development, and spatial economics. The publication of Johann Heinrich Von Thünen's first volume of *Der Isolierte Staat* in 1826 was where the location theory really gotten underway. His model describes the sales market situation in an “isolated state” with a centrally located city (Assink

& Groenendijk, 2009). The key factor underlying location is the closeness (or distance) to the market and the transport costs related to it. Von Thunen perceived location as the process of selection of sites for specific socio-economic activities and the best location for these socio-economic activities were where optimum resources exist for it. Similarly, Alfred Weber's work (1909) is considered to have established the foundations of modern location theories. One of his core assumptions is that firms will chose a location in view to minimize their total costs. This involves a set of simplifications, namely that location takes place in an isolated region with no external influences composed of one market, that space is isotropic and no variations in transport costs except a simple function of distance and that markets are in a specific number of centers.

The location theory basically addresses questions of what economic activities are located where within the city, and why. This can include questions about why firms choose a certain area over another or why certain types of retail and service business are in some places and not others. Von Thünen discovered that land-use patterns around German villages were remarkably similar. In explaining these patterns, he noticed two factors; which is the weight of materials to be transported and frequency of transport. Heavier materials will tend to be located closer to the village center and items that are transported more frequently will also be located closer to the village center. Villages that rely on a well for freshwater will tend to be built around the well, or the well in the center of the village (Deller, 2013). Similarly to von Thunens work, Thomas Goette's (2014) study tries to classify important international site factors and to structure the process of international site selection. Goette distinguishes between economic site conditions such as sales potential, competitive conditions, infrastructure and transportation costs, and political site conditions such as tax legislation, environmental protection, institutional market entry barriers, and political risks, (Goette, 2014). Goette aimed at providing a selection process, suggesting selected methods for each selection stage and offering a comprehensive list of criteria for the practitioner or firm to locate and gain profit.

In the Netherlands, for a considerable time now, location choice of companies has been an important focus of political-administrative attention. Location choices tend to be more relevant to the economic development of cities and regions than some of the other choices that organizations make. Employment levels, regional income levels and growth are to a large extent dependent on the location and investment choices made by a limited number of organizations (Assink & Groenendijk, 2009). The notion that business zones stimulate the regional economy has led to a strong increase in the number of

these commercial zones in the Netherlands within the past decade. The Dutch Central Bureau of Statistics (CBS) has recently shown that the growth in commercial land-uses even surpasses that for residential purposes.

Within the 20th century, “hard” factors such as transport costs and labour costs were considered to be the most important factors in the location choice in industrial countries like the Netherlands (Assink & Groenendijk, 2009). In the modern network society, with the influence of many factors being noticeable on a growing scale, “soft” factors such as institutions, knowledge, environment, mentality and aesthetics are more and more decisive in actual location choices. This growing importance within European cities can be observed in the planning of commercial zones involving a growing interest in the quality of urban development, integration into the surrounding landscape and sustainability. Justifiably, this changing dominance of certain location factors corresponds to a fundamental restructuring of economic activity from industrial activities towards a knowledge economy. The knowledge-based factor plays a crucial role in location decision making process for firms. This important “commodity” has become a decisive competition factor. The knowledge-based economy is characterized by the way it uses knowledge in interactive relations between market participants when producing and using goods and services (Camagni & Cappello, 2009). This simply means that the main location factor for companies nowadays lies in the level of skills and mentality within the area. For example, Transnet company when deciding to invest in an area would first research on the number of educated individuals occupying the area, and whether they have the relevant skills to work for the company.

Location choices are based on the specific principle of spatial organization of activity; namely accessibility, and in particular, accessibility to a market or a centre. For firms, high accessibility means that they have easy access to broad and diversified markets for final goods and production factors, to information, and to the hubs of international infrastructures (Assink & Groenendijk, 2009). For people, accessibility to a central business district characterized of job opportunities, public facilities etc. means that their commuting costs are minimal, while at the same time they enjoy easy access to a wide range of recreational services restricted to specific locations (e.g. theatres, museums, libraries) and proximity to specific services (e.g. universities), without having to pay the cost of long-distance travel. High demand for accessibility to central areas triggers competition between industrial and residential activities for locations closer to the market, or, more generally, closer to the central business district (the city centre). All the location choice models of this kind have an important feature in common;

the cost of land, or land rent. Assuming the existence of a single central business district, owing to high demand for central locations with their minimum transportation costs, land closer to the centre costs more; a condition emphasized by the total rigidity, at least in the short-to-medium period of the urban land supply. These models resolve the competition among activities based on a strict economic principle: firms able to locate in more central areas are those able to pay higher rents for those areas.

2.1.3.2 Associating location theory and Mixed land-use developments

Location theory generally assumes that agents act in their own self-interest. Firms thus choose locations that maximize their profits and in places of high accessibility, individuals choose locations that maximize their utility. Justifiably, mixed land-use areas are created through this process. Since firms locate in areas of greatest opportunity to gain profit, people also prefer locating closer to these firms in order to get jobs and generate income. This then creates the mixed land-use notion where residential, commercial and industrial zones are integrated. The location theory generally believes that, when many enterprises cluster or agglomerate in the same area, they can normally provide assistance to each other through shared talents, services, and facilities which is aligned to the principles of mixed-land use development. In post-apartheid planning within South Africa, the spatial development framework and land-use schemes have become the tool whereby location of investment occurs. Firms and companies rely on the SDF as well as land use scheme to identify areas of opportunity for investment. Companies therefore look at the status quo within the SDF which consists of the demographic profile, economic analysis (including employment trends and amount of labor available) within the area as well as nodes and corridors that promote investment opportunities. Therefore, firms locate based on the opportunities presented on the SDF and the scheme becomes the regulating tool for those opportunities presented. Within the South African context, the location theory is the basis in which mixed land-use development occurs.

2.1.3.3 The limitations of location theory in planning.

A central critique of the location theory is that Von Thunen assumed a lot of factors and did not consider site or human factors, making his model weak in many ways and attracts a lot of criticism. He assumed that people are always interested in maximizing profits. In Von Thunen's time, this was a particularly risky assumption because many Europeans remained locked into a semi-feudal mindset. In feudal times, most peasants did not think in terms of profits and losses, instead they thought about survival (Deller, 2013). Therefore, once they had put aside enough food and wood for the winter, they were generally not much interested in

working hard to develop a surplus. Additionally, many people tended to spend their entire lives within a few miles of their birth places, and most tended to follow the life patterns of their parents. Von thunen also ignored critical aspects such as cultural site conditions, for example, differences in language, mentality, religion, and the lack of acceptancy of foreign companies. He also disregarded geographical site conditions which are climate and topography. He assumed that all land is flat and mountains or rivers were not constraints of development in those areas.

2.2. Conceptual Framework

2.2.1 Socio-economic sustainability

Socio-economic sustainability is a complex concept in the sense that it cannot be defined from a single perspective. In order to provide a clear definition of the concept, it needs to be viewed in two terms; social sustainability and economic sustainability. According to Kahn (1995), social sustainability embraces notions of equity, empowerment, accessibility, participation, sharing, cultural identity, and institutional stability. It seeks to preserve the environment through community cohesion, economic growth and the alleviation of poverty. In the most basic sense, social sustainability implies a system of social organization that alleviates poverty (Ruttan, 1991). Economic sustainability indicates a system of production that satisfies present consumption levels without compromising future needs. According to Basiago (1999), in planning, socio-economic sustainability is achieved through the mixing of land-uses where apartment buildings are in close proximity to commercial zones for employment opportunities, health care, educational facilities, and also major transport routes for accessing public transportation which meets the urban service needs of the general public, particularly the urban poor, while enhancing the naturalness of the urban environment. With the aim of achieving sustainability in environments, the sustainable development goals (SDGs) were initiated by the United Nations to replace the Millennium Development Goals (MDGs) subsequently because the MDGs only focused on the problem, while SDGs focus on the cause of the problem. The MDGs were about development whereas SDGs are about sustainable development. The sustainable development goals (SDGs), officially known as transforming our world: the 2030 agenda for sustainable development is a set of 17 global goals with 169 targets between them (Griggs, 2013). The SDGs were established mainly to achieve the so-called “sustainable dream”. Therefore, in contemporary planning, sustainability can only be achieved through alignment with the sustainable development goals (SDGs).

2.2.2 Mixed land-use developments

According to Gupta (2014), mixed-use development is any urban or suburban development that consists of a mixture of residential, commercial, cultural, institutional or industrial uses integrated in the same area. Niemira (2007) also states that the term “mixed-use development” can be used more specifically to refer to mixed-use real estate development projects such as the combination of retail, office, residential, hotel, recreation or other functions that is pedestrian-oriented and developed by a private developer. Notwithstanding, Rabianski & Clements (2007) also mention that a mixed-use development is not a uniform product form but it can differ in location since it can be built in an urban setting or suburban setting. In the early 20th century, town planning was based on the main belief that different zoning should exist for different land use types (McDonald, 1995). Zoning was essential to an approach that separated uses that were incompatible within close proximity to each other. However, according to Grant (2002), as early as the mid-20th century, changes in transport and economic patterns resulted in urban sprawl in North American cities. Different urban renewal schemes were launched by government to revitalise older urban areas and resulted in the questioning of modern planning strategies. Jane Jacobs (1961) mainly criticized these modern planning techniques and argued that a mixture of different land-uses creates vibrant and successful neighborhoods. Bernick & Cervero (1997) stated that the mixed-use ideology creates a foundation for the popular paradigms of new urbanism and sustainable development. The protagonists of mixed-use saw modern urban planning’s effort to separate uses in the 20th century as unsustainable. They believed that mixing different land-uses was necessary and convenient for promoting urban sustainability.

2.2.3 New urbanism

The new urbanism movement emerged in the US during the 1980’s as a response to the failures of modernist planning approaches, and acting as neo-modernist movement. It evolved as a response to post-world war suburban sprawl in the USA caused by modernist ideas. New urbanism is an urban design movement which promotes environmentally friendly habits by creating walkable neighborhoods containing a wide range of housing and job types. The main focus was to bring about a variety of building types, to promote mixed use and integration especially in housing types as well as creating spaces that adhered to environmental impact of growth and encourage a sense of community. The legacy of modernism has been widely criticized in cities around the world, especially in the U.S where there was a separation of urban functions, and creation of nondescript architecture which led to the deterioration of downtowns and other older urban areas. Therefore, the main goal of new urbanism was to restore urban

centres and reconfigure suburbia using architecture that celebrates local history, climate, ecology and building practice to present a direct disagreement of modernism, and with redressing the negative effects of modernist design (Vanderbeek & Irazabal, 2007).

2.2.4 Spatial Development Framework (SDF)

A spatial development framework is an essential component of a municipality's economic, sectoral, spatial, social, institutional and environmental vision. In simple terms, it is a tool to accomplish the desired spatial form of the municipality (Drakenstein Municipality, 2015). Furthermore, a SDF is a framework that seeks to guide the overall spatial distribution of current and desirable land-use with a municipality in order to give effect to the vision, goals and objectives of the municipal integrated development plan (IDP). The purpose of the SDF is to guide the future growth and development of the municipality based on an agreed vision and principles which are aimed at addressing problems and creating opportunities for sustainable socio-economic development. An important aspect of brief for the SDF was the alignment with national and provincial policy, including the latest national guidelines for the development of spatial development frameworks (produced by the Department of Rural Development and Land Reform in 2014) and the approved Municipal Integrated Development Plan (IDP). One of the principles emerging from the SDF is to enable and promote mixed-use; "promote a mix of uses around nodes and along corridors within the accessibility grid" (Drakenstein municipality, 2015). Therefore, municipalities are encouraged to achieve mixed land-use developments through densification projects that are implemented by private sector (service providers).

2.2.5 Urban sprawl

A classical explanation of sprawl is associated with the low-density outward expansion of American cities dating back to the 20th century (kwakye, 2009). Sprawl is considered as a threat to cities and it has been proven that it harms the very culture of cities as it creates social, economic and environmental impacts (Salingaros, 2006). Sprawl has been defined as development that is geographically dispersed, auto-dependent, single use and usually located along highways. It is associated with low-density residential developments, which threaten farmlands and open space, encourages people and investment to leave central cities. Contemporary urban sprawl has been attributed to the high rate of urbanisation. For example, demand for housing and the desire for suburban lifestyle away from decaying inner cities. It can be acknowledged that the main cause of urban sprawl attributes from the informal growth of mixed-land use developments. The integration of commercial, residential, industrial and institutional often attracts people since everyone wants to be in close proximity to job

opportunities, health care, and educational facilities in order to increase their standards of living. The uncontrollable high influx of people to these areas then causes urbanization, which then leads to urban sprawl.

2.3 Chapter Summary

This chapter comprised of two sections. The first section made use of development theories such as neoliberalism theory, postmodernism theory and lastly location theory. These theories were presented from different perspectives to offer a spatial perspective of the realisation and understanding of mixed-land use development. Finally, the second section gave definitions of concepts which contribute the core in this research. These included definitions of what mixed land-use development is and concepts which explain the foundation of this dissertation.

Chapter 3: Literature Review and Precedent studies

3.0 Introduction

This chapter presents an analysis of the implementation and feasibility of mixed land-use developments across the globe. The chapter is comprised of four sections; the first section provides a contextual understanding of mixed land-use developments through providing the background, different types of mixed-use developments, as well as the need and limitations of the concept. The second section of the chapter focuses on the application of the concept in a developed country, which is within Netherlands using a case study of Eastern Docklands (Amsterdam) since it is a major urban transformation area in which the concept of mixed-use development has been implemented. The Third section comprises of an analysis of the mixing of land-uses in a developing country, such as India using a case study of Nagpur city which consists of a variety of mixed-uses that formed organically without planning regulations. This section aims to examine the impact of the mixed-use development on the local residents in the area. Lastly, the fourth section provides a contextual understanding of mixed land-use development in the South African context, including the legal framework and impact of these projects using a case study of Florida road situated in Durban.

3.1 The Background and evolution of Mixed Land-use developments

The history of mixed land-use can be traced within the 17th century (Niemira, 2007). Long before mixed-use was the trend in the United States, the concept was established in the company town which first appeared in the United States in 1645 with the Braintree Iron Works. In Margaret Crawford's book known as "The Design of American Company Towns", she recognized how some of the first model towns combined industry and housing. Indeed, one of America's founding fathers, Alexander Hamilton, developed a 700-acre model town in 1792 whereby the new industrial town was built along the Passaic River in northern New Jersey, and was named Paterson after New Jersey Governor William Paterson. Crawford recognized that in 1930 the Bureau of Labour Statistics estimated that more than two million people were living in company towns. However, shortly after, the effects of the Depression and changes in labour laws decreased their number, and the company town gradually disappeared from the American landscape (Niemira, 2007). Leading to its departure was that the availability of inexpensive automobiles greatly reduced the workers' dependence on their employer.

Since World War II, urban planning in many European and North American cities became considerably influenced by the principles of functionalism (Hoppenbrouwer & Louw, 2004).

A Functional City in which the four main functions of the city (housing, employment, recreation and transport) were clearly separated. This urban landscape was sought to increase efficiency and safety by separating incompatible activities. Poor urban conditions and pollution led to the segregation of land uses. However, during the 20th Century, there was a shift in town planning towards mixed land-use. In the 1960s and 1970s mixed land-use re-emerged as a tool for urban revitalization, in large-scale projects referred to among the development community as MXDs (Mixed-use Developments). This concept has become an important planning paradigm in cities globally. In Europe, mixed land-use is commonly seen as part of an urban renaissance or the compact city concept and in the US, as part of the so-called New Urbanism strategy (Bernick & Cervero, 1997). According to Rowley (1996), the concept of mixed land-use is however unclear. Likewise, Grant (2002:71) stated that mixed land-use has become a famous spatial planning concept in contemporary planning and its benefits have been taken for granted. This uncertainty is found in both theory and practice.

Furthermore, Grant (2002) argues that although mixing land-uses seems as a straightforward concept, a closer look at the objectives and strategies of the advocates of mixed-use reveals at least three conceptual levels. The first level is increasing the intensity of land use by, for instance, encouraging a mix of forms and tenures of housing. This social mix objective is more popular in North America than in Europe. Grant's second level involves increasing the diversity of uses by encouraging a compatible mix. In many cases, a mix of commercial or office uses with residential uses is seen as a mix which may generate positive effects. The third level involves integrating segregated uses and is about overcoming regulatory barriers mostly concerned with environmental impacts, noise, or traffic. Such mixing of residential land-use with industrial land uses was done pre-World War II in European cities for labourers to live closer to where they worked, mainly within industrial zones. The three conceptual levels reveal the uncertainty of mixed-use in that they refer to various contexts in which mixed-use is used: environmental, social, design and institutional.

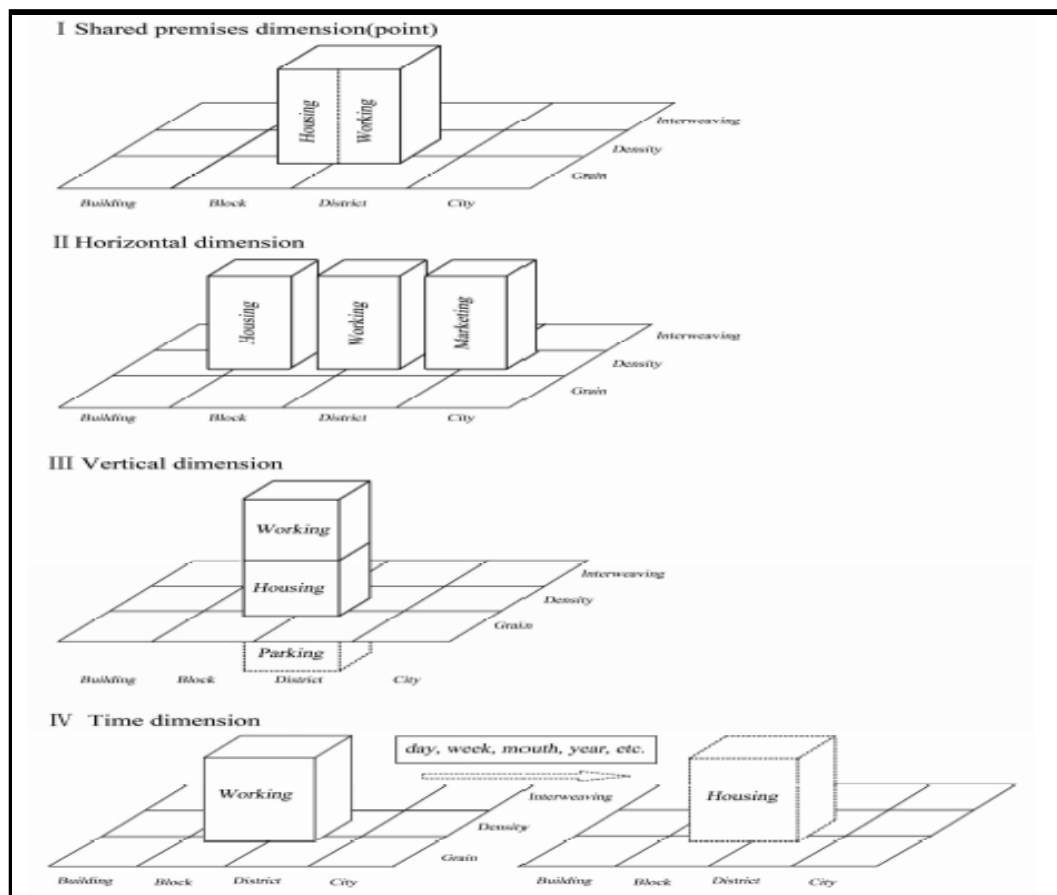
3.2 The Typologies of mixed land-use developments

It can be acknowledged that cities contain different types of mixed land-use developments, whether planned or unplanned. Many cities in the developing world contain organic mixed land-use developments which developed over time without proper planning in terms of regulations and land control tools. These types of mixed-use developments usually occur in areas where population densities increase drastically and are often difficult to address or

handle. Other cities, particularly in developed states contain mixed land-use developments which are strategically planned and guided by long-term visions.

Mixed-use developments can also vary in terms of functionality, structure and shape. On the basis of Erik Louw's research (2005), he established different typologies for mixed land-use from a spatial perspective and represent four dimensions (see figure 2). The first typology (I) is the shared premise dimension which refers to multifunctional use at a particular point. For example, premises in a building or dwelling used by one household. The second typology (II) is the horizontal dimension. For example, mixed-use between buildings on the flat surface. The third typology (III) is vertical dimension which are land uses vertically mixed by building two or more functions above each other such as residential over commercial uses, (see figure 2). Lastly, the fourth typology (IV) is the time dimension, when a particular building is used by two or more functions after each other. For example, a school can be used as a community centre in the evening and a theatre can be used for conferences during the daytime and as a cinema in the evening (see figure 2). All these dimensions have much to do with urban development intensity.

Figure 2: Mixed land use Typologies



Source: Hoppenbrouwer & Louw (2005)

3.3 The Benefits and Limitations of mixed land-use developments

Globally, the basis in which government supports mixed land-use development in planning policy is measured on whether it produces social, economic and environmental benefits. The first general reason for promoting mixed-use development is to reduce the need to travel by providing for a range of requirements in close proximity. The concentration of activities in one area creates the integration of activities possible while at the same time providing for a combination of potential traffic flows between these concentrations based on the application of efficient traffic systems (Priemus, 2000: 99). However, the concentration of various urban functions does not only affect mobility flows, but also the urban territory itself. The second general reason for promoting mixed-use development is due to its contribution to urban diversity and vitality. Mixed land-use development offers opportunities to improve the quality and attractiveness of the urban area, for example, by increasing use, activity and vitality during the day, in the evening and at weekends. According to the Oregon Transportation and Growth Management (TGM) program (1997), the success of mixed land-use developments is measured according to the following criteria; access to infrastructure services, access to a range of housing densities, access to economic and job opportunities, access to social and recreational facilities, access to a range of transportation options and the insurance of a safe and healthy living environment.

There may also be benefits in terms of preventing crime and promoting security. However, mixed land-use is not always the answer to all socio-economic categories. Grant (2002) states that mixed land-use promises economic vitality, social equity, and environmental sustainability, but it cannot readily deliver such benefits in a context where cultural and economic forces promote the separation of land uses. One such economic force is the real estate sector. According to Coupland (1997), developers are rather willing to proceed with mixed land-uses because they prefer safe and reliable investments which yield solid returns over an extended period instead of risky investments in mixed-use development. Hirt (2003) shows that in Cleveland, Ohio, the ‘rhetoric’ of mixed land-use is almost absent from zoning codes and that this gap between rhetoric and practice widens from the city core to the periphery. In addition, certain activities still demand separation from other uses, particularly residential. For example, heavy industry is generally incompatible with housing (Angotti & Hanhardt, 2001). Although contemporary industries are becoming cleaner and quieter than older industrial premises, it is unhealthy for a human-being to be living adjacent to such noise and pollution.

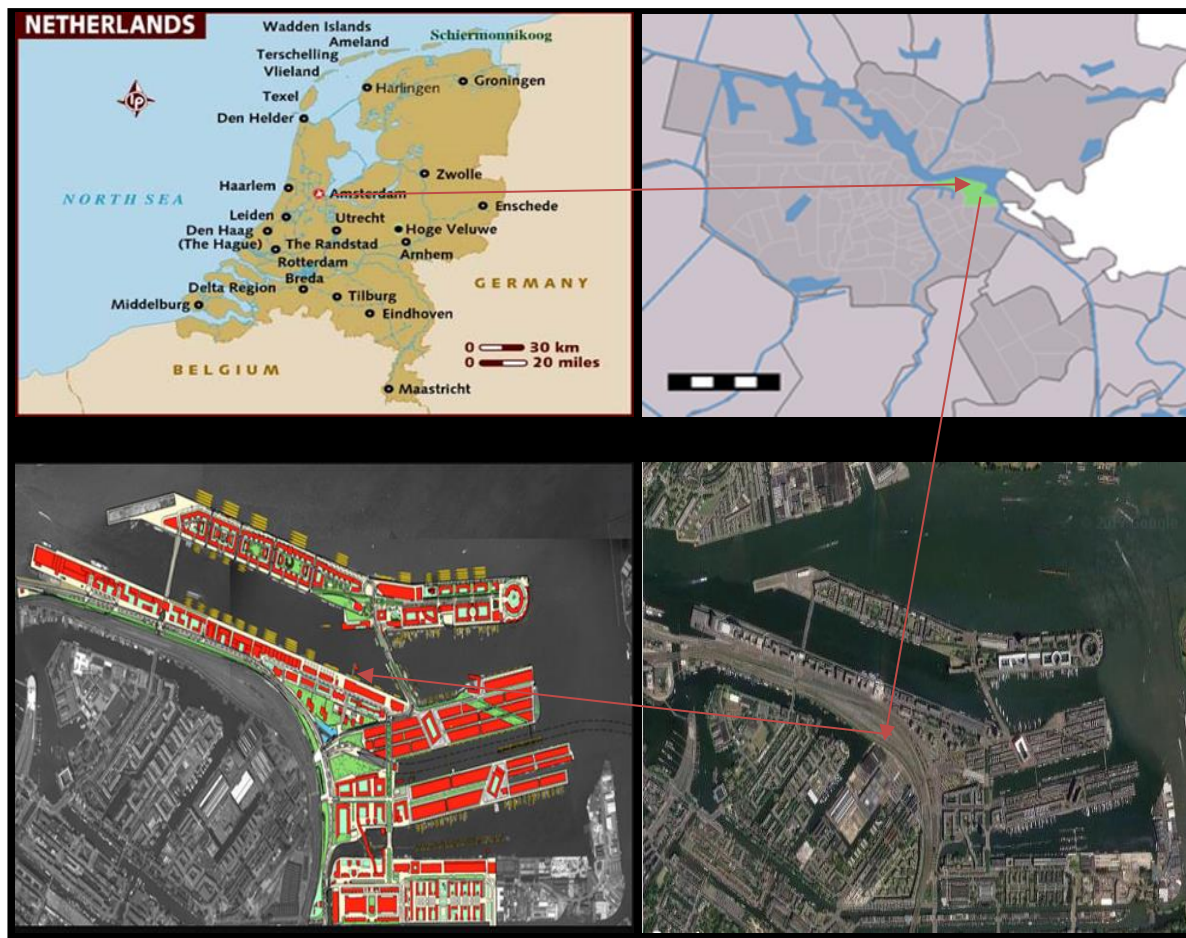
Therefore, mixed land-use and diversity does not automatically lead to vitality. Lynch (2000: 192) for instance states that too much diversity leads to an abundance of offerings resulting in urban stress. Finally, formulations of mixed-use development are insufficient in terms of urban design alone. It also comprises non-design features such as the urban experience, the nature of uses, definitions of public and private, conflict and security. In this context, Lynch (2000:192) states that mixed-use and diversity are desirable in the abstract, but they cannot be identified or measured until one knows how people perceive differences.

3.4 Case study: Developed country (Eastern Docklands, Amsterdam (Netherlands))

3.4.1 Background and Geographic location

The mixed-use development concept has become an important planning tool in various European and North American cities. However, the concept of mixed-use is unclear in both theory and practice. Eastern Docklands in Amsterdam, which is a major urban transformation area, incorporates the concept of mixed-use development and has been implemented (refer to figure 3). The city of Amsterdam is located in the province of North Holland in the west of the country within Amsterdam the Eastern Docklands precinct is located adjacent to the Harbour. Figure 3 below illustrates the exact location of the mixed land-use development in Eastern Docklands. The Eastern Docklands area is situated towards the eastern side of Amsterdam and near the coast. The area was also home to some 17,000 people living in the highest population densities in the country. In terms of the municipal scheme in Amsterdam, the segment in red on the map represents the commercial & office space, the yellow represents residential flats and green represents open space and recreational facilities, and lastly the light blue zones are the industrial estates which was existing development before the project was implemented.

Figure 3: Eastern Docklands Locality Map



Source: Google images (June 2017)

3.4.2 Guiding Policies and Legislations

In terms of policies and legislations guiding mixed-use development in the Netherlands, the compact city concept and a restrictive building policy has been at the forefront of Dutch planning policies for the last two decades with an objective of preventing uncontrolled urban sprawl and to encourage urban renaissance (Dieleman, 1999). The compact city concept has been implemented by densifying within existing settlements and concentrating greenfield developments to within existing built-up areas. Mixed-use development has been part of this policy since the mid-1980s. It was implemented in large cities such as Rotterdam and Amsterdam, aimed mostly at mixing residential and commercial. This was in part a reaction to the mistakes of earlier urban renewal programmes which were primarily focused on residential. After some time, programmes also involved the renewal and redevelopment of some industrial and service premises, but the focus was still on housing. The municipality of Amsterdam started to implement the compact city concept in the 1980s. Within 1984, the municipality

published the draft structure plan 'De stad centraal' (Focus on the City) in which mixed land-use and compactness were officially introduced as policy goals (Gemeente Amsterdam, 1984).

3.4.3 Implementation and Impact of the mixed-use Precinct in Eastern Docklands

The first plan to revitalize the Eastern Docklands area was drawn up in 1980. The Eastern Docklands consisted of some artificial peninsulas developed around the 1900s, adjacent to the inner city of Amsterdam. It was traditionally a thriving harbour for the transshipment of bulk goods and general cargo. When this area gradually lost its harbour function during the 1970s, it was decided to transform the area into a residential area. An important precondition was the commitment of the local government to a compact city with additional urban development in close proximity to the city (Hoppenbrouwer & Louw, 2005). A mix of land uses was always the purpose. Initially, it was intended to develop several small-scale industrial and commercial estates mainly to accommodate businesses, which were obliged to relocate because of incompatible urban renewal policies. In 1990, the local government improved the original plan. The main aim of the precinct was to stop the decreasing number of inhabitants by increasing the quality and quantity of the housing stock and improving the level of employment. The project also attempted to develop small-scale business spaces for offices, workshops and studios on the ground floor of apartment blocks and home-working premises. This would increase the area's vitality and would also be a way of achieving an attractive urban environment. The scheme included approximately 8500 dwellings, approximately 100,000 square metres of commercial spaces (offices, businesses and a shopping mall) and approximately 20,000 square metres of educational and service facilities. The mixed land-use development project starting in 1987 up until 2003.

In order to determine the impact of the Eastern Docklands Mixed land-use project on entrepreneurs and local residents, a survey was taken within the area in order to view people's perceptions of the Eastern Docklands and their motives for settling there. The survey was structured in order to identify perceptions of companies and residents in both residential and commercial premises. For the survey only, companies in the residential sub-areas were selected. The companies in the industrial areas were excluded because these areas were not developed as part of the mixed-use development since they already existed in the area before the project. In the telephone survey, entrepreneurs were asked about their perception of the Eastern Docklands mixed-use and their motives for settling there. A field survey was taken in order to establish the perceptions of the residents effected by the mixed land-use. In general, entrepreneurs were very satisfied with their accommodation and location in the Eastern

Docklands. In terms of the number of businesses in the Eastern Docklands, it seemed that the policy of local government to mix land-uses were successful. However, businesses in the residential areas were very small and mainly in the commercial service sector. These services did not bring about the lively, stimulating and secure public territory for residents. For residents, location close to the city centre were highly appreciated and the quality of the built environment. The urban structure and architectural design were also highly appreciated. However, the residents were much less satisfied with the dense surroundings (40% stated that the density is too high) and the parking facilities, which appeared to be insufficient (47% said these are bad). The residents were also not satisfied with the location of industrial parks adjacent to their homes with 34 % of residents reported being unhappy with the noise and air pollution affecting them and their children. It is concluded that in this area there is a good deal of mixing between housing and employment, but it is still unclear whether the strategic goals are reached (Hoppenbrouwer & Louw, 2005).

3.4.4 Lessons: The sustainability of the Eastern Docklands mixed land-use development

The case study has validated that the concept of mixed-land use in Eastern docklands aimed to increase the number of inhabitants and intensity near the harbour through increasing the quality and quantity of the housing stock and improving the level of employment. This area is a comprehensive redevelopment area, which was transformed from a harbour area into a mixed-use area. We can also acknowledge that the government aimed to increase the functionality of the area since it was dying out and less people were existent in the area. Given that the intensity of activity is dependent on the number of users as well as the mix of uses, and since the Eastern Docklands had a small range of users, it could be assumed that this area has a low intensity of activity.

In terms of the number of businesses in the Eastern Docklands, it seems that the policy of local government to mix land uses has been successful. Not only does the number of jobs outnumber the forecasts, but entrepreneurs are also satisfied with the area. However, the impact of the area on residents were uncertain to some extent. Residents were unsatisfied with the area in terms of health, although many jobs were created, people ended up getting sick and unable to work efficiently. The non-compatible land uses of manufacturing and housing are evident in the Eastern Docklands. The only compatible land uses that existed were within the private space, which is the mix of housing and working in the domestic area. It is therefore questionable whether the benefits of mixed use such as promoting urban vitality are really achieved within the development of the Eastern Docklands.

3.5 Context of a Developing country: Mixed land-use developments in India

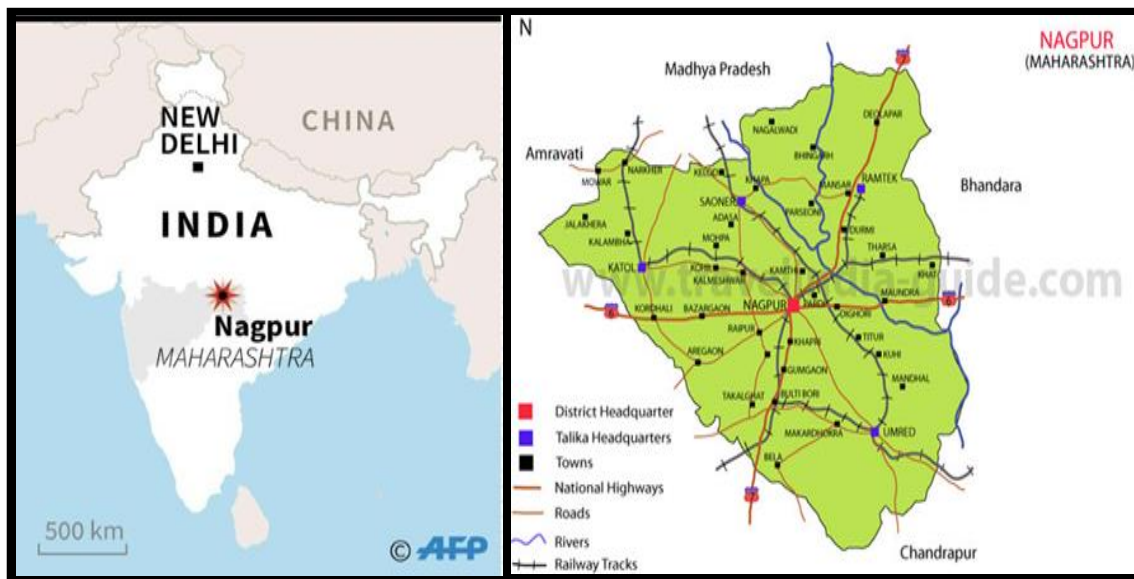
Traditionally, over the years, Indian cities have had mixed land-use characteristics with a high mix of commercial and residential uses (Bahadure & Kotharkar, 2015). However, over time, the residential land-use has been replaced by commercial activities due to economic market pressures. For example, almost all the residential colonies in Delhi where mixed use was allowed faced this problem. The mixed-use regulation was introduced in 2006 to prevent the sealing and demolition of commercial establishments operating illegally in residential areas. But today, this has led to extensive commercialization in residential colonies, thereby adding to the load on civic infrastructure (Bahadure & Kotharkar, 2015). Within other areas in the city, exists a moderate mix in sub-centres or along a major road. It is obvious from the current state of Indian cities that land-use mix when left uncontrolled leads to the issues of environmental externalities related to mixed land-use. Thus, there is a need to investigate the range of the land-use mix that will enhance sustainability.

3.5.1 Case study: Mixed land-use development in Nagpur, India

3.5.1.1 Location and Demographic analysis

Nagpur is centrally located in India and well connected to major cities in the country by air, rail, and road (refer to figure 4). It acts as the key administrative, business and institutional centre for central India. The total area of Nagpur Municipal Corporation is 21,756 hectares, the city is ranked the thirteenth largest urban agglomeration in India. According to census 2011, the Nagpur Municipality has a total population of 2,405,665 people. Within the total population, the males constitute 1,225,405 and females constitute 1,180,270. The total children (ages 0–6) are 247,078, of whom 128,290 are boys and 118,788 are girls. Children form 10.27% of total population of Nagpur. The total number of slums number is 179,952 in which 859,487 people reside. Nagpur is an emerging metropolis area. In 2004, it was ranked the fastest-growing city in India in terms of the number of households. The city has been the main centre of commerce in the region of Vidarbha since its early days and is an important trading location.

Figure 4: Nagpur Locality



Source: Google Images (June 2017)

3.5.1.2 Legal and Policy framework

In the context of India, the announcements on policy and legislative enactments pertaining to town planning evolved around the 1950s and 1960s. Despite these policy enactments, India lacks a comprehensive urban land-use policy. The guiding policies and legislations of mixed-land use in India include the following; National Capital Region Planning Board Act of 1985, derived from this legislation was the Regional Plan 2005 policy which aimed at promoting regional growth through the creation of efficient networks (upgrading of infrastructure and development of a rational land utilization patterns) (Biswas, 2016). On the national sphere of government, urban planning and development administration are administered by the State Town Planning Act and other relevant legal framework of each state. Presently, all states have ministries responsible for urban planning, urban development, housing and governance.

3.5.1.3 The Analysis of Nagpur Mixed Land-use development

Within Nagpur, there is an observed pattern of a varying land-use mix within the city. The core has a dense mixed land-use environment that has evolved over time (see image 1).

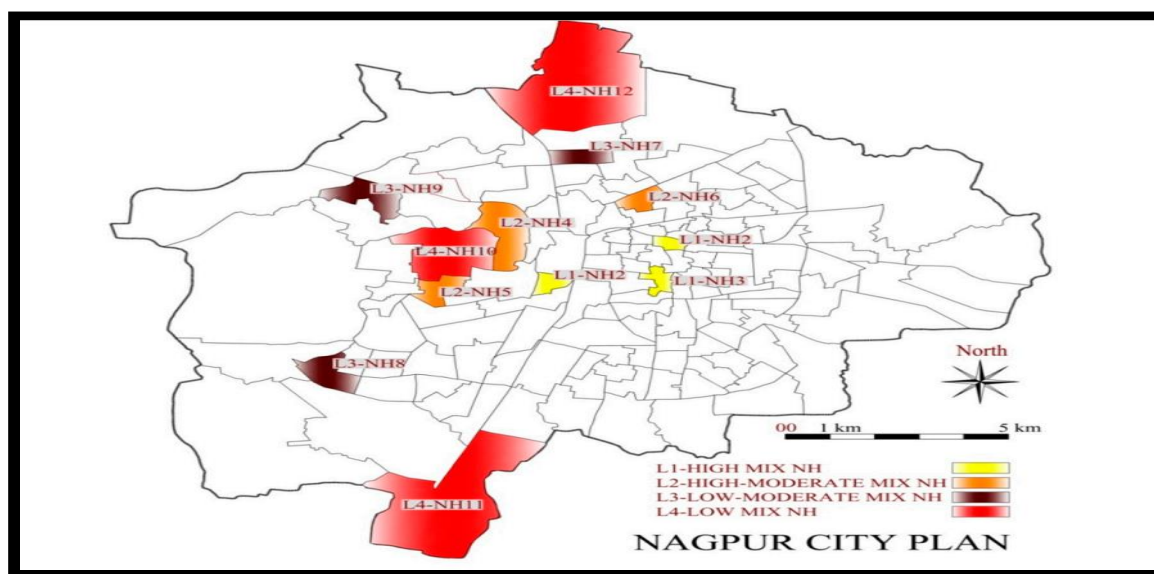
Image 1: Nagpur CBD Mixed use area



Source: Google images (July 2017)

These areas have high land value and rental value making them less feasible for pure residential use; so mixed land-use exists within this jurisdiction. There are planned and semi-planned areas with a balance of residential and non-residential activities. Within the periphery, sprawled areas near the fringe are partly planned and partly unplanned plotted development with residential and no commercial use. There are different typologies of neighbourhoods within the Nagpur Municipal Corporation limit; each with a different land-use mix. An attempt is made to study the sustainability status of neighbourhoods with varying mixed land-use. To do this, twelve neighbourhoods (NH1 to NH12) under four categories (L1 to L4) of varying residential and commercial mix were selected for the study (refer to figure 5).

Figure 5: Spatial location of selected neighbourhoods in Nagpur city



Source: Bahadure & Kotharkar (2015)

The level 1 (L1) areas in terms of spatial distribution are the compact and core areas, organic, medium high-rise density consisting of high mix of commercial and residential land-use types. The level 2 (L2) areas are partly new planned moderately dense, consisting of commercial with residential land-use. The level 3 (L3) areas are partly moderately dense and planned and partly sprawled low-rise areas consisting of mix of commercial only along the major road with no influx of commercial in the residential areas. Lastly the level 4 (L4) areas are partly planned and partly unplanned sprawled low rise consisting of very less ingress of commercial activity and residential land-use. In terms of sampling the number of households to be surveyed, a simple random sampling across the twelve neighborhoods with uniform stratification was carried out. Within the survey, it was noted that within neighborhood 1 (NH1), due to commercial dominance, only those people having their workplaces in the same neighborhood reside there while others have migrated to different parts of the city leaving their residential space for commercial use. It was also observed that the high land-use mix in neighborhoods results in more residents having their workplaces within 25 meters (assumed as work from home). This indicates the close proximity to the workplace in high land-use mix areas and high walkability is noted in these areas.

In terms of pollution and traffic problems, L1 neighborhoods (high land mix-use areas) were characteristic of high pollution and the problem of traffic congestion were observed in these areas. However, some residents from the highly noisy L1 area mentioned that they are used to the high noise level and feel uncomfortable in complete silence. L3 neighborhoods (moderate mix-use areas) were noted as less polluted neighborhoods. NH10 did not also comprise of major pollution issues due to high greenery and low density. Some pollution in NH11 and NH12 areas were seen due to continuous construction work (Bahadure & Kotharkar, 2015). In terms of favour mix, this includes resident's opinion on the mixing of land-uses and income. In overall, households favored a mix of land-uses. They mentioned that the shops, should be on the main road and the residential area should be in the inner part of the neighborhood by which they would benefit from the proximity to daily needs without having to suffer the externalities associated with commercial use.

3.5.1.4 Lessons: The sustainability of the Nagpur mixed land-use development

It can be distinguished that case studies consistently mention the social benefits of the mix land-use, but the study presented here reveals that neighbourhoods with moderate land-use mix are better liveable spaces than neighbourhoods with high land-use mix. This may be due to the

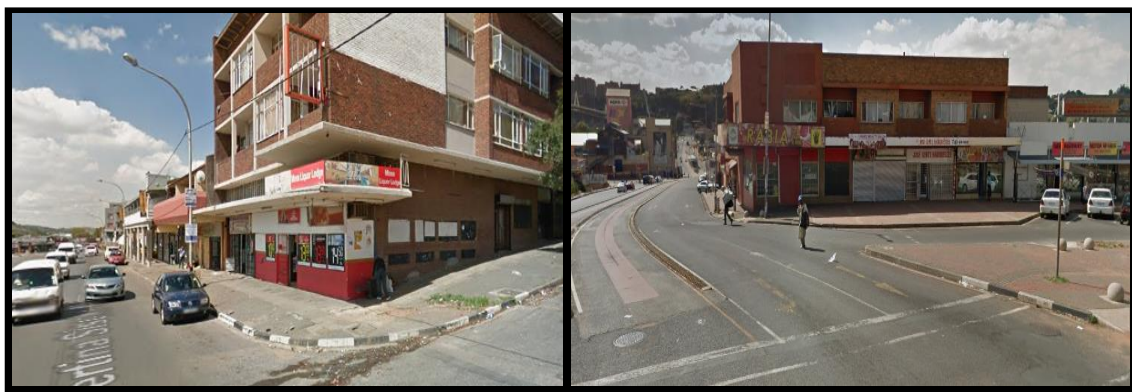
fact that most prior studies have been in the context of developed countries where the land-use mix characteristics are very different from developing countries. Moreover, people's adaptability to various impacts of land-use mix also varies. It is observed that overall residents express a level of satisfaction even with inadequate facilities and infrastructure. Thus, none of the neighborhoods were considered extremely-sustainable or extremely-unsustainable and only neighborhoods with moderate land-use mix were considered the most sustainable, areas with high and low land-use mix were perceived to be average sustainable. It is acknowledged that within the high mix land use areas (L1), residents were unsatisfied due to congestion and lack of open space. Therefore, it is significant for there to be planning for open spaces and green areas within mixed-land use developments. People require areas of relaxation and away from noise, such as parks and gardens to refresh their minds, which also relieves stress from work and congestion thus positively increasing their psychological well-being. It was also learnt that residents prefer commercial areas to be located on the main road and the residential areas should be in the inner part of the neighborhood since they would benefit from the proximity to daily needs.

3.6 A Contextual analysis of Mixed Land-use developments in South Africa

Within the South African context, the promotion of mixed land-use development is derived from the National Development Plan (NDP). The Nation Development Plan's (NDP's) human settlement targets, as set out in chapter 8 focuses on transforming human settlements and the national space economy, through including more people living closer to their places of work; better quality public transport; and more jobs in proximity to townships (National Planning Commission, 2012). To achieve these targets, it advocates for strong measures to prevent further development of housing in marginal places, increased urban densities to support public transport, incentivising economic activity in and adjacent to townships. In achieving this national policy, the SDF is then used as a tool to decentralize development in the country. Each municipality is then required to compile and assemble an SDF as per (Municipal Systems Act 2000) in order to achieve the desired spatial form of the municipality. Through the SDF, mixed land-use development is promoted through nodal plans, precinct plans and densification projects within local municipalities. Therefore, the notion of mixed land-use development is highly promoted in South Africa, However, these proponents have not yet provided sufficient clarity and precision about intended objectives or appropriate strategies of mixed-use development.

Within the country, mixed land-use developments also experience some challenges that are usually area specific. These issues relate to the lack of alignment with the regulation of land use schemes, parking provision, long-term financing and a lack of collaboration between all stakeholders (Adelaide City Council, 2010). For example, in 2007 the City of Austin, Texas adopted commercial design guidelines after negotiations with all stakeholders. The aim was to make its regulations more flexible in order to achieve the developmental vision for Midtown Commons, which was an urban infill area. While this was not an easy task, four years later, the area was a thriving mixed-use development. It was noted that the mixed-use development evolved organically over time due to lack of regulation from the local government (Harding, 2012: 6-16). It is also important to determine if universal design principles are applicable in the South African context because mixed-use developments pose a different range of challenges that are unique to each context (Bredell, 2012). Conservation of the urban environment should also not be taken lightly because if not well maintained, mixed use precincts can deteriorate, negatively impacting amenities and investment in the area. For example, while vacant buildings are not the source of many problems, they can cause the devaluation of property in an area. While there is demand for planned mixed land-use development, challenges remain, largely because of regulatory restrictions. The mixed land-use precinct in Troyeville, Johannesburg within the GEP Bezuidenhout (see image 2) is an example whereby unoccupied buildings created feelings of neglect and insecurity. Other problems of the precinct include buildings being used for unsuitable purposes, such as motor vehicle repairs, uncontrolled informal trading activities and environmental degradation (Albonico Sack Mzumara Architects & Urban Designers, 2005: 4).

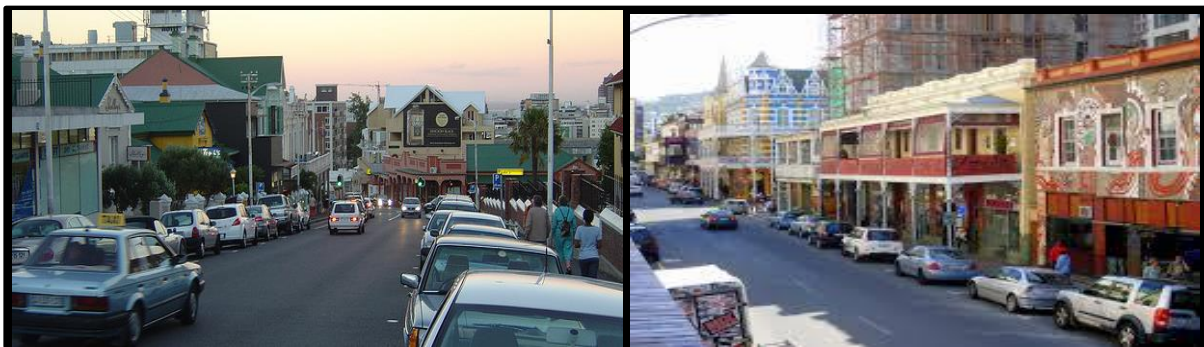
Image 2: Troyeville mixed-use area (Johannesburg)



Source: Google maps (August 2017)

It can be acknowledged that the biggest challenge with South Africa's mixed land-use precincts is the lack of management and land regulation. Parnell and Pieterse (2010) argue that in Cape Town, good enforcement typically occurs in medium income neighborhoods as opposed to poorer neighborhoods. Cape Town's CBD has undergone considerable positive transformation since its decline after the end of apartheid era. Within the city, in Long Street is a popular mixed-use corridor consisting of distribution of bars and night clubs that is confronted by the typical issues of drug-related activities and prostitution (see image 3).

Image 3: Long street mixed-use corridor, Cape Town



Source: Google images (August 2017)

While Long Street's history is one known of racial exclusion, the street is a very diverse, shared space; and this diversity is limited by racially isolated patterns within spaces (Tredoux & Dixon, 2009: 8 -13). Currently, cities in South African context are embarking on a mission to revitalise certain areas that declined over time for various reasons. These areas are a direct result of the Group Areas Act that emerged from apartheid planning. However, there are also areas with potential for successful mixed land-use development. For example, Johannesburg's inner city declined during the transition to democracy as white property owners vacated from their buildings, ultimately leading to the influx of people in need of housing, therefore occupying these buildings. In addition, the way they located themselves in this area, also created racial segregated of coloured, Indian and black areas. The city managers aim to capitalise on the historical relevance and cultural significance of the most deteriorated spaces and places. Revitalisation is seen as essential for the city's long-term sustainability. This requires an understanding that planned mixed use precincts can foster social cohesion, respond to people's cultural values and can also be spaces for the conservation of heritage like the Freedom Park Heritage Precinct in Johannesburg (Prinsloo, 2010).

The same can be achieved by organic developments such as the Maboneng precinct, located in Johannesburg's inner city. This precinct is currently being converted into Johannesburg's creative hub – Arts on Main. The project is currently driven by agents who have a desire to transform Johannesburg's reputation through mixed land-use development (Propertuity, 2013). According to the City of Johannesburg's Property Growth report (ibid, 2013 :10), previously an industrial area, the Maboneng precinct was left dilapidated with vacant buildings which became spaces for illegal activities, ultimately resulting in very high crime levels, making the area inaccessible to the general public. While urban transition goes through numerous stages at different scales, at the end of the day, visions and projections for a precinct should not compromise the livelihoods of inhabitants. South Africa's past is still deeply rooted in these spaces and as cities take on a new shape of mixed land-uses, any land-use changes should take people's significant needs into account; if not, the problems will either persist or take on new form.

3.6.1 Guiding Policy and Legislative Framework

a) The National Development Plan (NDP) has been the centre of planning across the republic. All national and provincial planning policies have been derived from the NDP. One of the fundamental components of the national vision statement contained within the National Development Plan: Vision for 2030 (August 2012) highlights the importance of spatial planning and equity linked to development. It is therefore acknowledged that growth, development and overall human well-being is inextricably linked to sustainable use of the land through the mix of land-uses to limit urban sprawl, and prioritising urban transport networks that are adequately resourced and well run (National Planning Commission, 2012: 124).

b) The introduction of the Spatial Planning and Land Use Management Act (16 of 2013) (SPLUMA) has been put in place to aid effective and efficient planning and land-use management in the republic. It also aims to address the spatial divisions of the past and create single, integrated spatial planning systems and more coherent and inclusive approaches to land and land development in municipalities. Within the principles of SPLUMA contained in chapter 2 of the legislation, the principle of spatial sustainability specifically encourages the development of land in locations that are sustainable and limit urban sprawl; and result in communities that are viable. In addition, Section 21 of SPLUMA specifies that spatial development frameworks must identify designated areas in which more detailed local plans must be developed that promote densification, and Spatial Compact Areas.

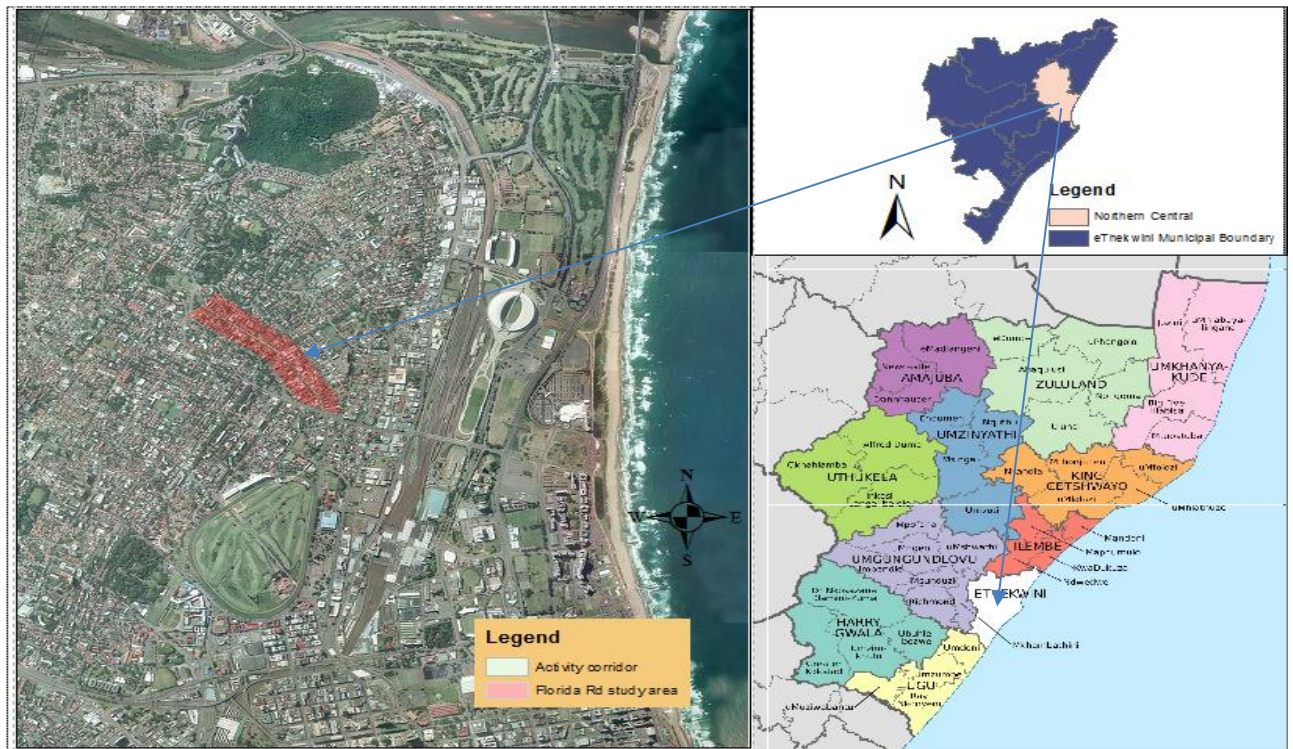
c) The **KwaZulu-Natal Provincial Growth and Development Strategy (KZN PGDS)** was established in 2011 to provide KwaZulu-Natal with a reasoned strategic framework for accelerating and sharing economic growth through catalytic and developmental interventions within a coherent equitable spatial development architecture, putting people first, particularly the poor and vulnerable, and building sustainable communities, livelihoods and living environments. In terms of the PGDS/P, Strategic Goal number 7 focuses on accomplishing spatial equity across the province through promotion of ward based plans and continuation of small town regeneration and rehabilitation programmes which include the mixing of land-uses to actively increase spatial concentration and coordination of development interventions.

d) **The Integrated Urban Development Framework (IUDF)** is a coherent government strategy formulated by the National Department of Cooperative Government (DCOG). It seeks to create a shared understanding across government and society about how best to manage urbanisation and achieve the goals of economic development, job creation and improved living conditions for our people (Department of Cooperative Governance, 2016). The IUDF proposes an urban growth and management model premised on compact and connected cities and towns to address the urban realities and challenges that face the country and through providing a framework to work towards integrated urban development. It proposes several policy priorities and specifically highlights the need for densification and mixed-use as follows; to identify core public transport nodes and corridors and to develop a national policy framework to support settlement densification along priority corridors and nodes. The policy also promotes densification and mixed-use through supporting back-yarding in townships and low-cost housing neighbourhoods.

3.6.2 Durban Case Study: Florida Road Mixed land-use Precinct

Florida Road lies within the Windermere area, which is a medium-high residential area within Berea North of the Durban CBD (the primary centre for investment and opportunities). The area is situated within the northern central operational entity within eThekweni Municipality (Figure 6). The precinct is part of the Florida Road Urban Improvement District, under the authority of eThekweni Metropolitan Municipality. Florida Road is one of the oldest streets in the Durban Metropolitan Area. At the end of 18th century and at the beginning of the 19th century, many large residences were built along the road in Victorian and Edwardian styles, which created a unique identity for the road.

Figure 6: Florida road Locality map

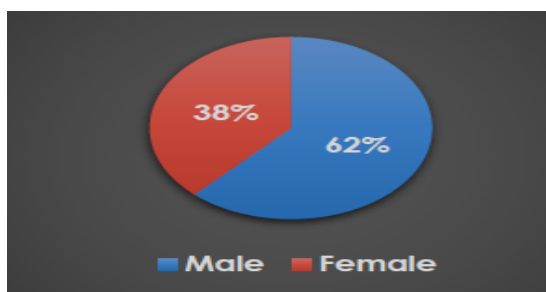


Source: Author (August 2017); (ArchGis)

3.6.2.1 Demographic & Economic analysis

According to Cele (2015), in terms of the sampled residents within the survey, 62% of the respondents were male while 38% were female (see figure 7). Most of the participants interviewed were within the age group of under 25, 40% of the residents interviewed were within the age group 36-45 and 30% were over the age of 45. The rest of the respondents were 35 years and younger.

Figure 7: Distribution of Gender sampled, Florida road



Source: Cele (2015)

eThekweni Metro is a dominant economic active city within the KwaZulu-Natal province. The city's economy is equitably diversified with major strengths in commerce, manufacturing and the tourism sector being the largest sub-sector (Padayachee, 2000). The Florida Road area contributes a significant role in the tourism sector and performs a city-wide function within the municipal jurisdiction (Iyer, 2012). In terms of employment, 55% were self-employed, 10 % were professionals and 20% interviewed had retired. In terms of annual household income, half of the residents interviewed earned an annual income of less than R100 000, 7% earned between R100 000-300 000 and 11% of residents earned between R300 000-400 000.

3.6.2.2 Land Use Analysis of Florida mixed-use precinct

Although the Florida Road area was previously predominantly residential, it has grown organically into a vibrant activity corridor consisting of a more diverse, mixed land-use orientation. It is also socially, ethically and architecturally diverse (Cele, 2015). The precinct has retained its architectural character with a mixed-use zone for residential, office and commercial buildings. These buildings add value to the urban fabric and carry a particular history and aesthetic quality which cannot be duplicated. The precinct also contains public spaces, which encourage a sense of community such as the accessible public space, which is often used as an events platform. Image 4 & 5 below represent some of the assets associated with the Florida road mixed-use precinct. Image 4 shows the Benjamin Hotel and image 5 displays a building hosting a mix of uses on Florida road, predominantly restaurants and fast food Nandos and Kauai.

Image 4: Benjamin hotel (Zoned General Residential 1)



Source: Cele (2015)

Image 5: Building composed of Commercial & Residential activities



Source: Cele (2015)

Florida Road consists of a variety of non-compatible and compatible mixed land-uses all within walking distance. The road consists of both horizontal and vertical mixed land-uses. The precinct has a range of land uses such as professional offices, residential flats, retail/business, art galleries and hotels. The variety of residential typologies that exist within the area include duplexes, semidetached and maisonettes houses which are located along the road (Cele, 2015). The northern portion of the mixed-use precinct, which is also the quietest portion has predominantly residential and professional office uses. As one moves along the mixed-use precinct, the concentration of the land-uses and compactness of the buildings increases; these are horizontal and vertical mixed-uses such as restaurants, hair salons, night clubs, furniture shops, art galleries, a community grocery shop and place of worship (refer to image 6 below).

Image 6: Vertical mixed land-uses in Florida Road precinct

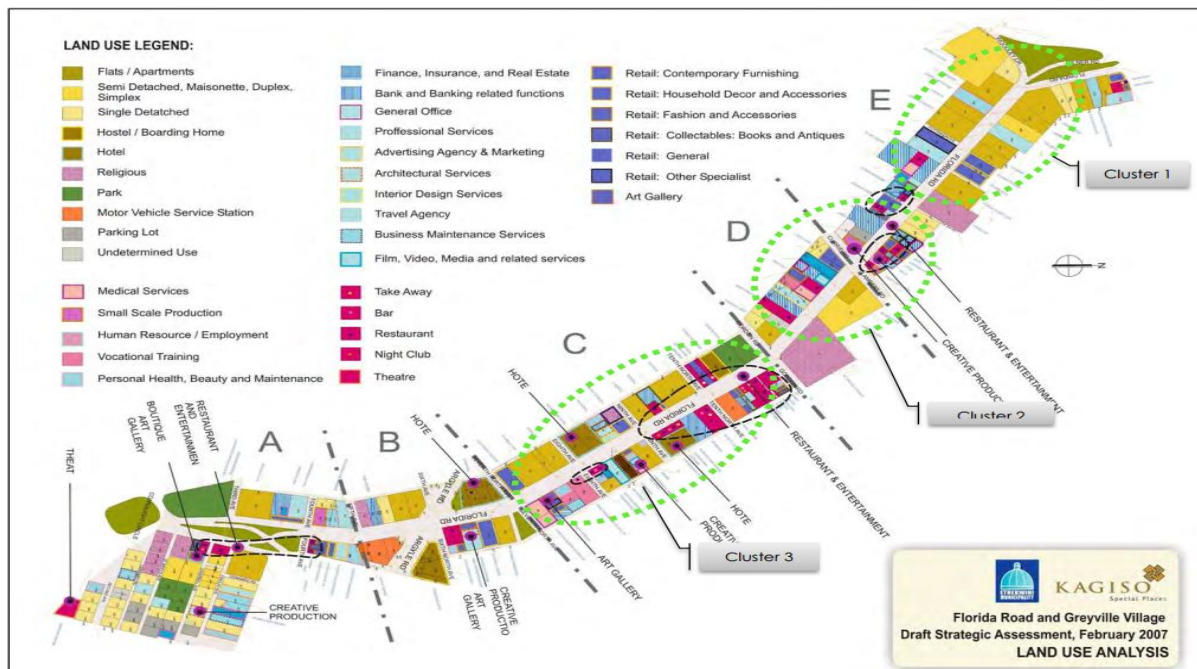


Source: Cele (2015)

3.6.2.3 Comparative Land Use Analysis: 2007 – 2014

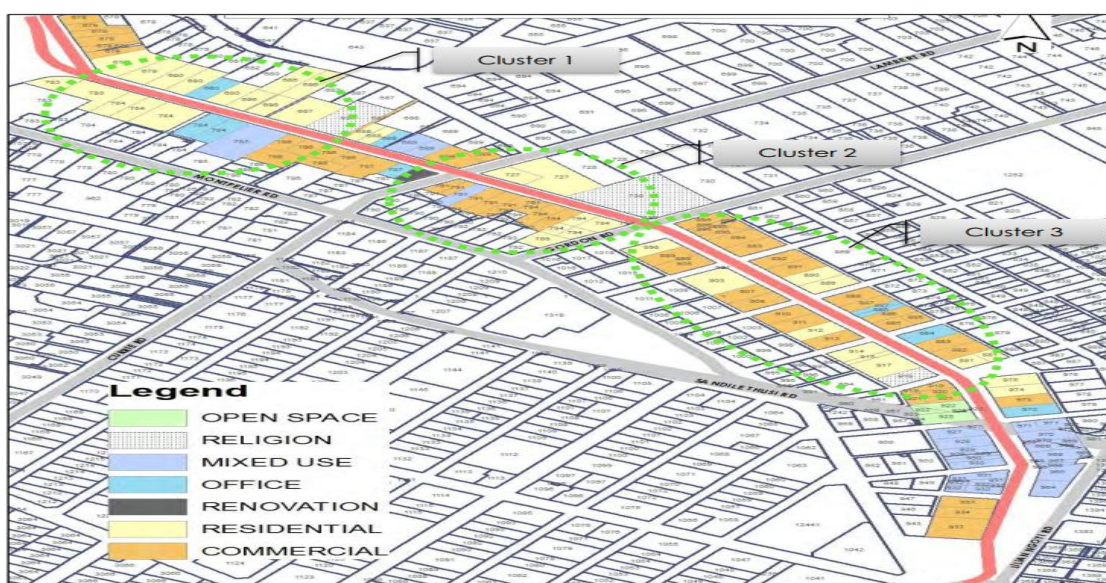
A comparative land-use analysis of Florida road precinct below is provided in order to analyse the land-use change over a period of 7 years which occurred organically due to commercial and residential pressures (refer to figure 8 & 9).

Figure 8: Land-use Composition in 2007, Florida Road



Source: Kagiso Special Spaces (2007)

Figure 9: Land Use Composition in 2014, Florida Road



Source: Cele (2015)

In comparison between the nature of the land-uses in 2007 and 2014 land-uses (refer to figure 7 & 8), it can be observed that the northern cluster (Cluster 1) stayed the same, mainly residential with a number of offices offering professional services. However, with the addition of a night club on Cluster 2, the nature of entertainment/retail mixed-use also stayed the same. However, Cluster 3 drastically changed in terms of the types of commercial land-uses; additional lounges which were previously restaurants and the number of offices decreased as compared to 2007. Additional places of worship also occurred, ultimately Cluster 3 experienced very significant land-use changes adding to the intensity and competing uses in the area.

3.6.2.4 Impact of Florida Road mixed land-use precinct on Residents

In order to determine the perception and effect of the mixed-use precinct on the local people in the area, primary data was collected through questionnaires specific to individual groups including open-ended questions and face-to-face interviews. About 60% of the residents had lived in the area for less than five years and only 30% had lived there for less than one year. About 10% of the residents had lived in the area for five years and more. In terms of the reasons for residing in the area, the respondents that had lived in the area for five years and more mainly stayed because of the location and atmosphere and all the respondents favoured the vibe or experience of Florida Road.

Residents were asked how long they had lived in the area and their opinion of the area. One resident mentioned that he had bought his property 10 years ago and further stated that it is a wonderful place to live in, which is why he stayed there for so long. He was also intrigued by the different styles of buildings and aesthetics, which is filled with cultural movement. Residents were also asked whether they had noticed changes in the overall appearance of the area. About 95% of the residents stated that they had noticed some changes on the road. Negative changes included a high level of theft (car theft); noise pollution and the overall nuisance caused by evening activities. The positive changes cited by residents include the cleanliness of the street, signage and landscape maintenance. They were further asked if they had considered moving to another area. Half of the respondents answered with a no and 30% answered with a yes. Further examination of the affirmative responses revealed that these fell within the portion of respondents who feel unsafe (Cele, 2015).

The road was deemed unsafe. Secondly, the drug dealers stand right outside the flats and sell drugs day and night; thirdly, it was stated that the noise at night is terrible; the nightclubs do

not care about the effect of the noise on people who are asleep at night; the noise goes on from the evening until the morning. In addition, the residents mentioned that drunken teenagers pollute the street at night, they park their cars anyhow. Generally, respondents ranked access to shops as the most important feature in the study area, followed by the historical character of the area which was mostly ranked second, a good place to live ranked third and the public transport system ranked least important.

3.6.2.5 Lessons learnt from the Florida Road mixed land-use precinct

It was important to understand the resident's feelings regarding their safety and level of comfort in the area. It was noted that 60% of the respondents mentioned that they feel safe and 40% said they do not feel safe. The road appears to have adequate lighting at night; in this case, the lack of safety is due to the number of people that visit the area at night. The precinct manager mentioned that Florida Road precinct at the time was dealing with many management issues which are evidently much more apparent during the evening. There are illegal and alcohol-related activities and a variety of social issues emanating from such activities, and residents have raised their safety concerns more than once. With regards to land-use management in the mixed-use precinct, the planning manager of eThekweni Metro Municipality within the land-use management directorate specified that the land-use management (LUM) section had come to play a corrective role because in the past, 2008/9, a shadow land-use scheme was prepared for Florida Road without translating it to a proper legislated scheme. This shadow scheme was done together with a guideline document with no legal statement. This was an incorrect mechanism which undermined planning. It can be acknowledged that this was the core reason why the Florida road mixed land-use area grew organically with no proper planning. This ultimately led to businesses occupying space illegally within the precinct and therefore causing pollution as well as safety issues (Cele, 2015). It is therefore significant that mixed-land use developments are regulated and planned for, using a town planning scheme (land-use scheme). This will provide formality, safety as well as order, provide permissions, conditions, limitations or exemptions, subject to which such developments may be permitted within the municipal jurisdiction.

3.7 Chapter Summary

This chapter presented the context of mixed land-use developments in Europe with reference to the Eastern Docklands Case study. The chapter then provided an analysis of the mixing of land-uses in a developing world, referring to the case study of Nagpur, India. Through establishing the perceptions and satisfaction of residents living within a mixed-use area.

Furthermore, the chapter presented a contextual understanding of mixed land-use development in the South African context including the policy and legal framework as well as the implementation of a mixed-use development using a case study of Florida road, Durban. As mentioned in the case studies, the mixed land-use concept cannot be encouraged anywhere with no proper planning. For example, the Eastern Docklands example in Netherlands encouraged mixed land-use development using an approved town planning scheme in order to increase the number of inhabitants in the inner city, whereas in a developing country the population is already high and therefore more regulation is needed. The case study of Nagpur, India and Florida road in Durban are similar in the sense that both mixed land-use developments grew organically without proper regulation. It is therefore acknowledged that mixed land-use developments need to be strategically planned for through alignment with the Municipal SDF and land-use scheme.

Chapter Four: A Case Study of Isipingo, eThekweni Municipality

4.0 Introduction

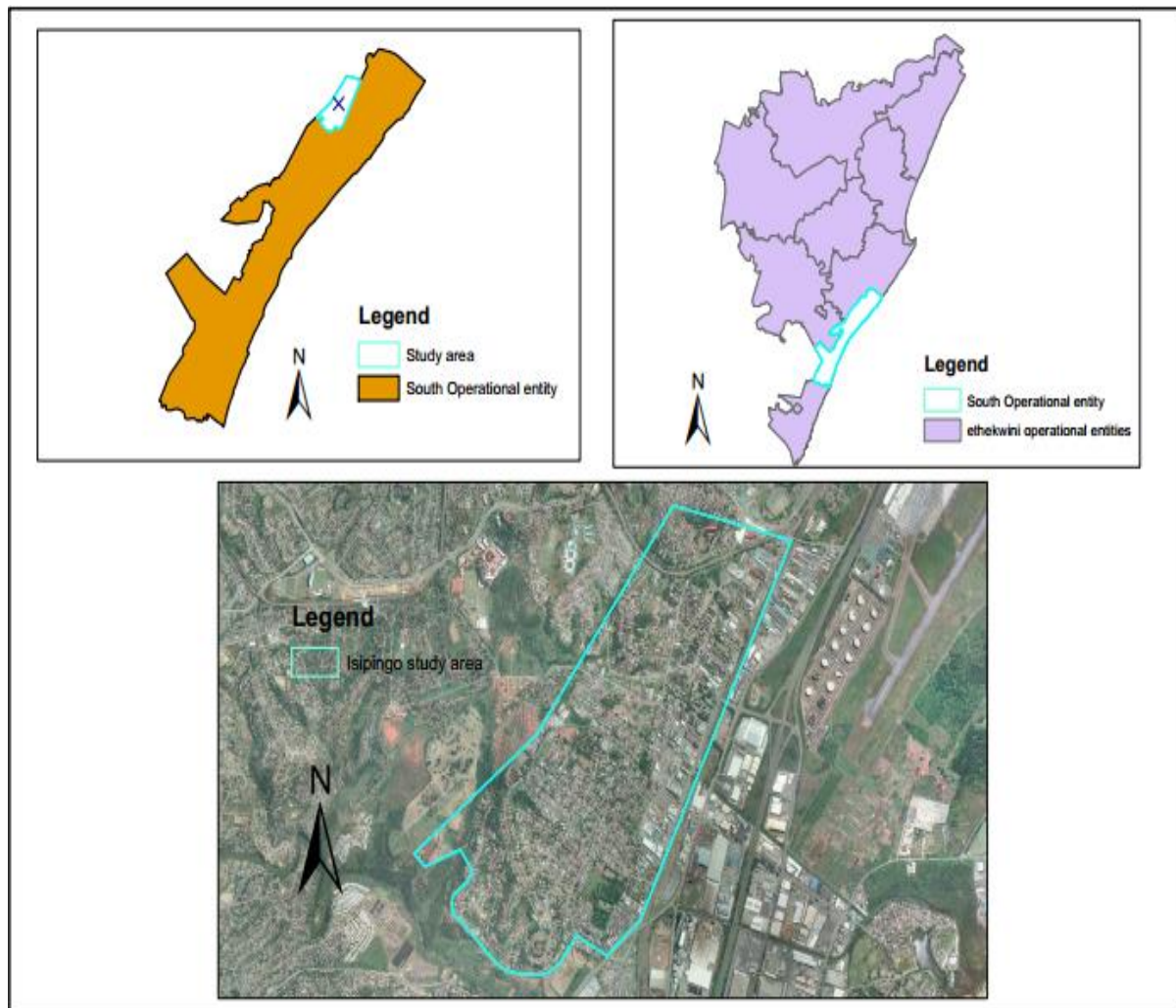
This chapter comprises of two sections. The first section illustrates the background of the study area, its location and its role within the broader eThekweni Metropolitan area. The section further illustrates the situational analysis of the case study area by presenting the demographic profile, environmental analysis, existing social facilities and land ownership within the area. The second section covers the analysis of land-uses within Isipingo study area including the zoning in terms of the eThekweni Town Planning Scheme. Lastly, the section explains and spatially depicts the transport networks and connectivity within the area including the connection of existing eThekweni public transport system within the study area. It is important to clarify that Durban is also referred to as eThekweni Metropolitan Municipal Jurisdiction.

4.1 Background and Geographic Location

The Isipingo study area is approximately 15 km south of the Durban Central Business District and situated within the South operational entity of Durban (refer to figure 10). It is located directly adjacent to the R102 and in close proximity to the N2 freeway. Isipingo enjoys high accessibility since it functions as a major transport and commercial node in the southern Metro (Bhoora, 2009). The area is located in close proximity of major metropolitan and regional transport routes, metropolitan industrial areas and major areas of employment. Before the 1800s, Isipingo was established by Khoi-San people and thereafter by Zulu people at least by the 1820s before being ceded to Dick King in 1843 for sugarcane production (Bhoora, 2009). Due to apartheid planning, the Isipingo coastal area along the east coast, with its pristine and private sea fronts was inhabited by Whites only. Across the freeway, inland to the west, was where the Indians who were forcefully removed from other parts of KwaZulu-Natal were relocated, this was within the Isipingo Rail and Isipingo Hills areas. However, due to the arrival of industrialization and increase in urbanization, the white race group relocated to the city centre, and surrounding areas such as Amanzimtoti. Towards the end of the century, the Isipingo coast area, and Isipingo as a whole eventually became invaded by Indian families who realized the economic potential of the area due to its accessibility and the increase in volume of people into the area. By 1919, the Indian community had formed the Isipingo Indian Society, later to become the Indian Civic Association. Trading began with fruit, vegetable and livestock but led to tailors, supermarkets and eventually current trends that include industrial activities, thus organically forming a mixed land-use node. The rail facility stimulated further economic opportunities due to the large volumes of people it brought into the area, and the local

municipality began investing in the area by providing housing for the residents. Hence, Isipingo became a convenient economic and social hub, and has since become a thriving town centre. Figure 10 below illustrates Isipingo's location within the eThekweni Municipal jurisdiction, and boundary of the case study area.

Figure 10: Isipingo Study Area locality map



Source: Author (September, 2017); (ArcGis 10.3)

4.2 Demographic analysis

4.2.1 Total Population and Gender profile

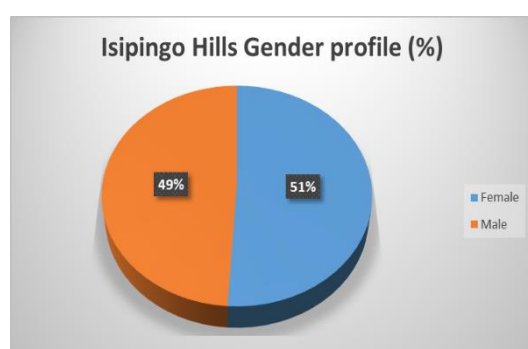
According to Stats SA community survey, the study area (Isipingo Hills) consists of approximately 6291 people (3508.03 per km²) and 1650 households (920.09 per km²). Within that population, 3174 are woman which constitutes 51 % of the population, and 3118 are males, constituting 49 % of the population (Stats SA, 2011). The following figure and table present gender distribution and profile of Isipingo area.

Table 1: Isipingo Gender distribution

Gender	People	Percentage
Female	3174	51 %
Male	3118	49 %

Source: Stats SA (2011)

Figure 11: Isipingo Gender Profile



Source: Author (September 2017)

4.2.2 Population Groups

In terms of population groups (race) within Isipingo Hills, 3863 of the total population consist of Black people, which constitutes 61 %. Based on the history as stated above, the Isipingo area was largely consisting of Indian and Asian groups; however, this has changed. According to Stats SA data, the urbanization experienced in the area were mainly black individuals who located to be near job opportunities. Indians and Asians now constitute 2300 of the total population (37 %), coloureds constitute 100 people (2 %) and whites constitute 12 people (0.19 %) respectively. Other groups were estimated to be 16 people, constituting 0.25 % of the population (refer to table 2).

Table 2: Isipingo Population Groups

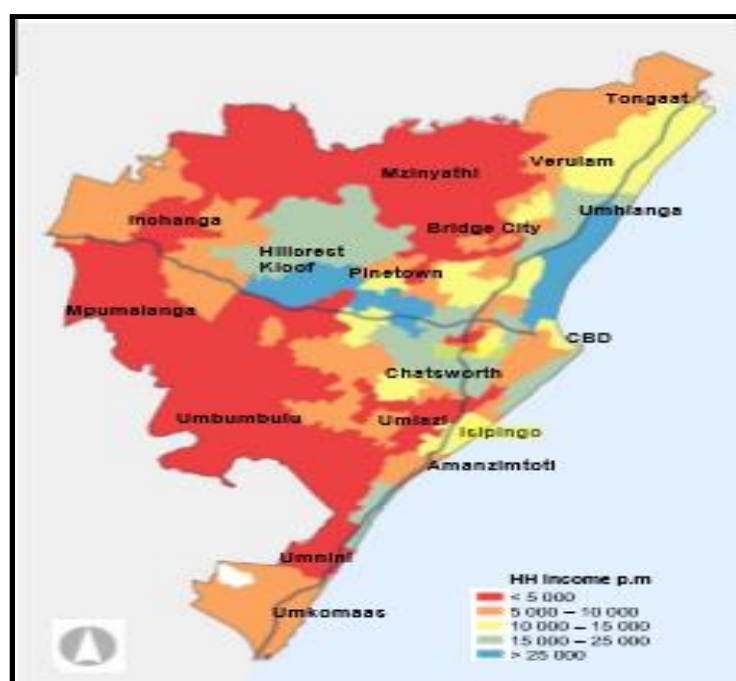
Population group	People	Percentage
Black African	3863	61.41%
Indian or Asian	2300	36.56%
Coloured	100	1.59%
Other	16	0.25%

Source: Stats SA (2011)

4.2.1 Isipingo household income

In terms of household income within the eThekweni municipal area, it was estimated that the majority of the population within Isipingo earn between R10 000 - R15 000 (eThekweni Municipality, 2017). The eThekweni Dwelling Count 2011 counted every dwelling within municipal extents, and then gathered data of the household income and household size according to housing typology and housing location (figure 12). The municipality used data sources such as metro billing data, aerial photography, and sample ground verification.

Figure 12: Residential Incomes in the eThekweni Municipal Area



Source: eThekweni Spatial Development Framework (2017)

4.3 Climate and Environmental analysis

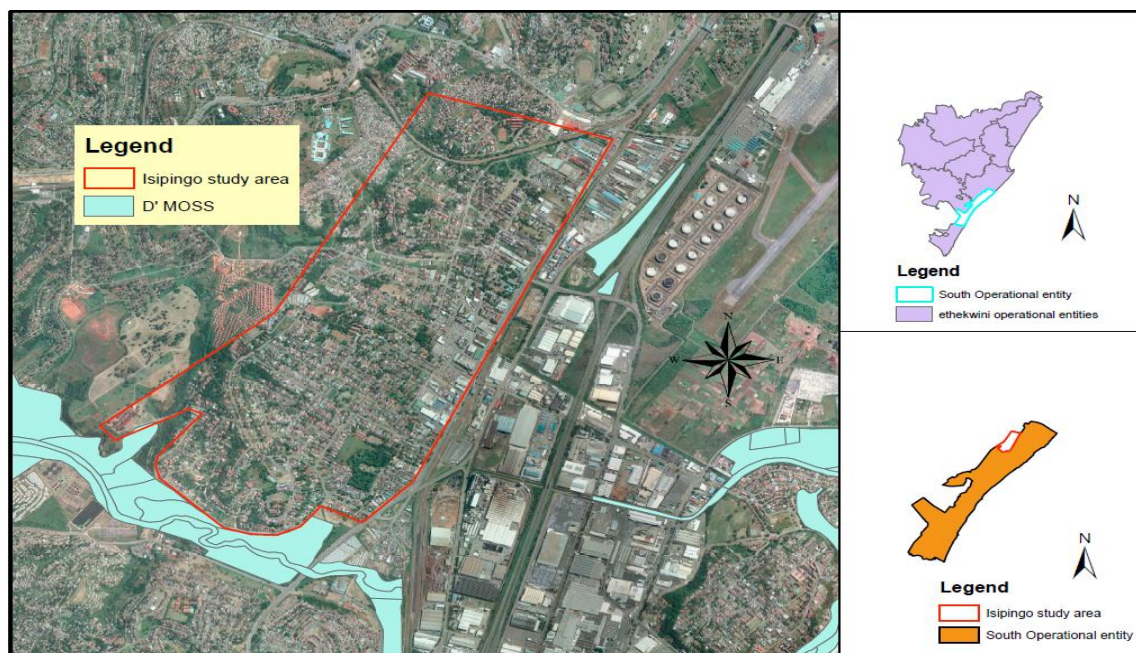
4.3.1 Climate

According to the Weatherbase (2017), the average annual rainfall noted for Isipingo is 991 mm. Most of rainfall is received from September to April. There is low rainfall from May to August. The month with the highest average rainfall is March (127 mm). The average annual rainfall in Durban is 980 mm which is similar to rainfall measured at Isipingo. In terms of temperature, the average temperatures for Durban range between 17 and 25°C with maximum temperatures being experienced from January to March and minimum temperatures occurring between May and August. Similarly, the average temperatures for Isipingo range between 17 and 24°C with average maximum temperatures being experienced from January to March and lower temperatures occur between May and September (SRK Consulting, 2017).

4.3.2 Durban Metropolitan Open Space System (D'Moss)

D'MOSS is a system of open spaces, some 74 000 ha of land and water that incorporates areas of high biodiversity value linked together in a viable network of open spaces (eThekweni Municipality, 2011). The D'moss coverage within the study area covers approximately 0.02 % of the site (ArcGis, 2017). Figure 13 below spatially depicts this coverage and it is noted that the D'MOSS exists within the southern west part of the site, and further prevails within the surrounding area of Isipingo.

Figure 13: D'MOSS within Isipingo study area



Source: Author (September 2017); ArGIS 10.3

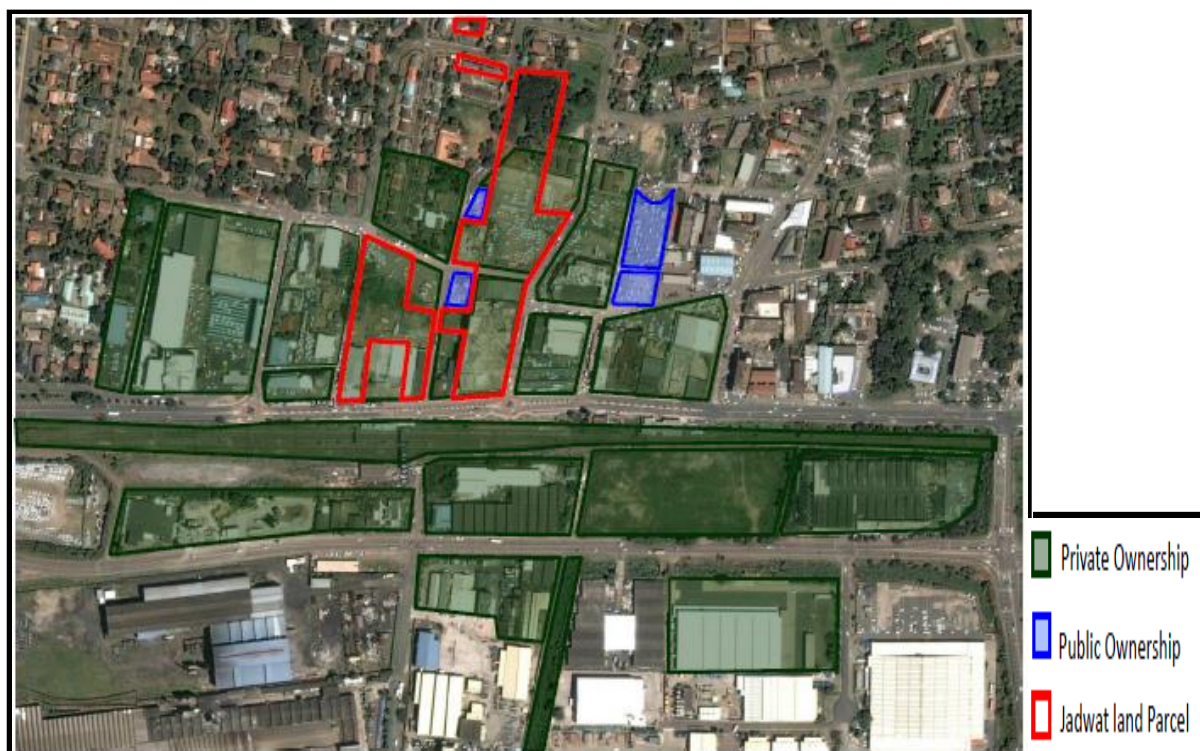
4.3.5 Agriculture

Within the study area, it was observed that there is a lack of urban agriculture production. Although traders sell vegetables at the town centre, they do not plant in close proximity to where they sell. During consultations with one of the local residents, they specified that they crop within their home due to limited community gardens (agricultural land) within Isipingo. It is therefore acknowledged that urban agriculture should be promoted and practiced for better Local Economic Development (LED) within Isipingo.

4.4 Land ownership

According to Iyer Urban Design Studio (2008), approximately 86 % of the land within the Isipingo Town centre is privately owned (see figure 14). During an interview with key informants, it was mentioned that the landlords (owners of the land) purposefully allowed overcrowding as a means of extracting additional rent from tenants whilst simultaneously neglecting to pay rates and levies. As a result, the tenants become exploited. Investment within the area has been limited due to these legal land issues. For example, the land owners only want things to be done their way to benefit themselves. Therefore, it has been difficult for the municipality as well as private sector to revitalize the area.

Figure 14: Land ownership within Isipingo CBD

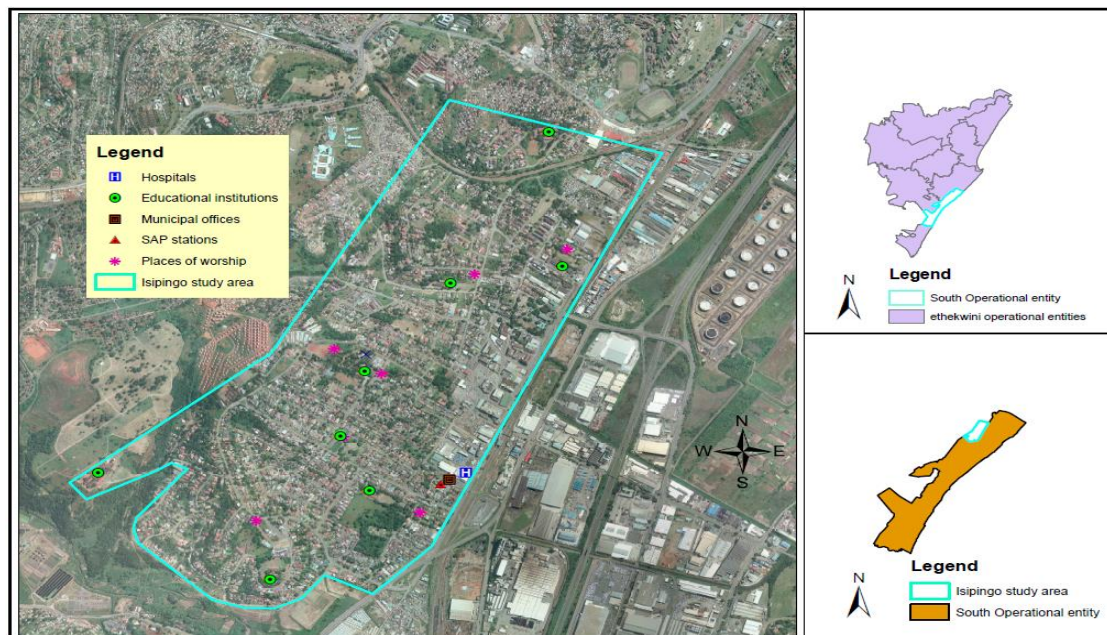


Source: Iyer Urban Design Studio (2008)

4.5 Public Facilities

In terms of public facilities, the sampled area is characterized of buildings such as the JMH Isipingo hospital, a clinic, SAPS police station, Isipingo Hills primary school, and religious buildings such as the Isipingo hills masjid (Mosque). Figure 15 below spatially depicts the social facilities within the whole Isipingo study area, indicating the main Hospital, 8 educational facilities including primary, secondary and tertiary institutions, 1 police station, 1 municipal office and 7 places of worship occupying the study area.

Figure 15: Isipingo social facilities map



Source: Author (September 2017); ArchGis 10.3

4.6 Land-use Analysis

4.6.1 Major Land uses and Urban form

Within the data collection process, field observations revealed that one of the outstanding elements of the core study area is the existence of horizontal and vertical organic mixed land use development filled with pedestrian movement around were most commercial activities and transport facilities are located (Image 7 & 8). The urban space where these activities occur is not well-planned and maintained to cater for the demands which are placed on it.

Image 7 & 8: Horizontal and vertical mixed land-uses



Source: Author (November 2017)

In terms of residential development within the study area, vertical residential block of flats, and low to medium income housing prevail within noisy areas such as commercial, logistics and light industry areas (image 9 & 10). Image 9 (on the left consist) of rental housing vertically on top of commercial land uses, such as a spaza shop, salon and a cell phone repair store. Image 10 (on the right) depicts medium income housing situated opposite light industrial area as well as next to an illegal truck parking area with no licencing which is not conducive for the well-being of inhabitants within Isipingo.

Image 9 & 10: Residential buildings mixed with logistics, commercial and light industry areas.



Source: Author (November, 2017)

The types of businesses identified within the study area vary and there does not appear to be any specific specialization. Businesses include formal and informal trade such as clothing, furniture stores, car audio installation, tyres and spares outlets, supermarkets, salons, cell phone repairs, medical facilities, and so on (image 11 & 12).

Image 11 & 12: Informal and formal Businesses

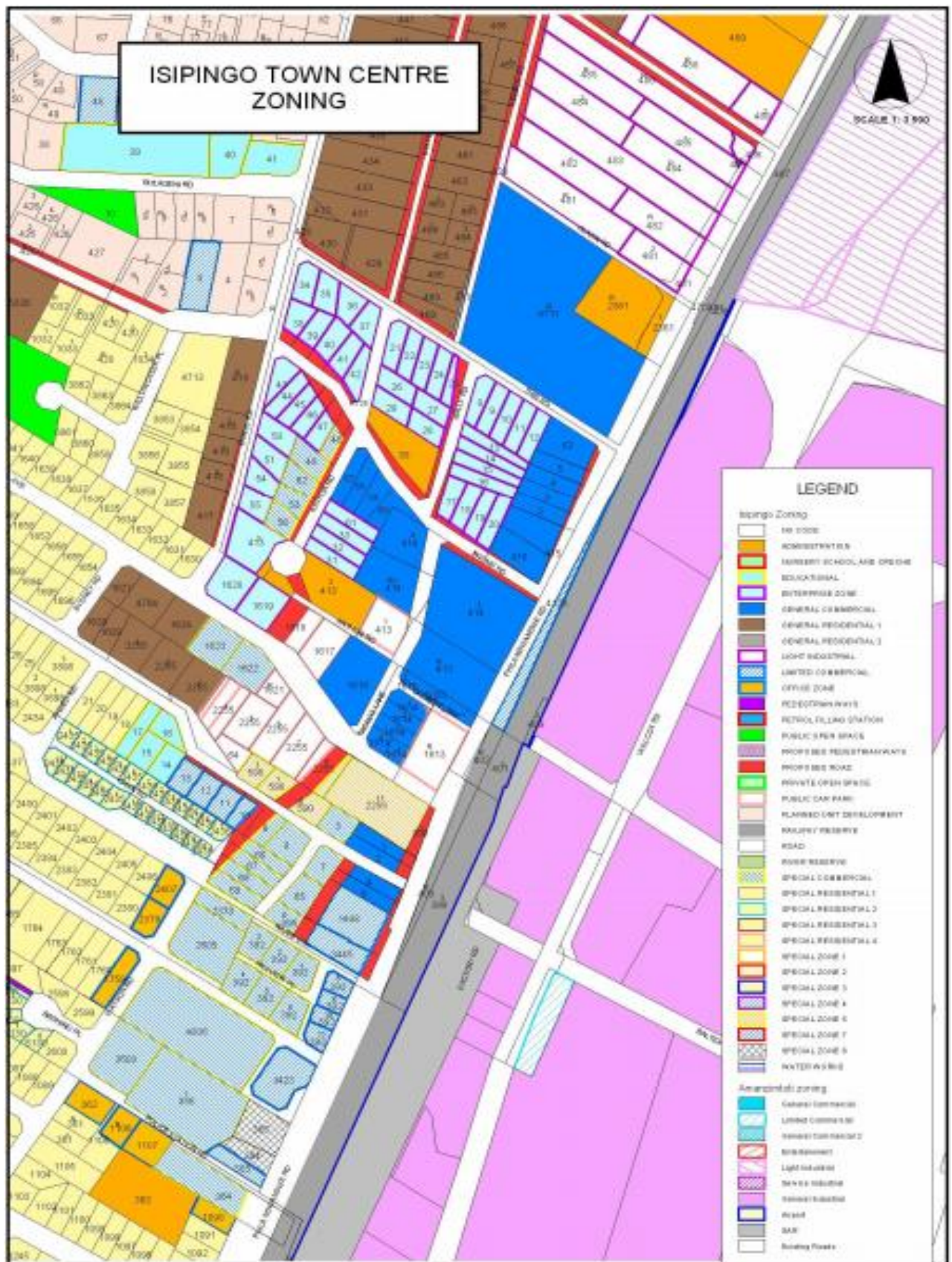


Source: Author (November 2017)

4.6.2 Land-use zoning

Figure 16 below illustrates the zoning of properties within the Isipingo town centre according to the eThekweni Municipality draft town planning scheme. The predominant zones, which characterize the town centre and permit the existing uses, are Enterprise Zone, Administration Zone, General Commercial, General Residential, Limited Commercial, Light Industrial, Planned Unit Development, Special Commercial, Special Residential 1, Office Zone, and General Industrial. Within the town centre, the administration zoned sites accommodate the municipal offices, school, and other social facilities depicted in Figure 3 above illustrating the location of social facilities within the study area. The Enterprise Zone consists of a mix of uses ranging from service workshops to industrial buildings, warehouses, and shops. The General Commercial zoned sites are used predominantly for shops, wholesale shops, offices and flats. The Special Commercial zoned sites are similarly being used for office, shop and residential purposes. The Special Residential and General Residential zoned sites are being used for individual dwelling units, medium density housing, and flats. The Planned Unit Development zoned sites are also being used for residential purposes. The properties zoned Light Industry accommodate light industrial buildings, offices, warehouses, commercial workshops such as shoe repairs, valet services and electricians, and service industrial buildings. The General Industry zoned sites also accommodate warehouses, light industrial buildings, and general industrial buildings such as those utilized by SA Breweries, Robertson's Spice etc. The Limited Commercial zoned sites also accommodate uses such as flats, shops, wholesale shops, used car lots, and offices.

Figure 16: Land-use zoning within Isipingo

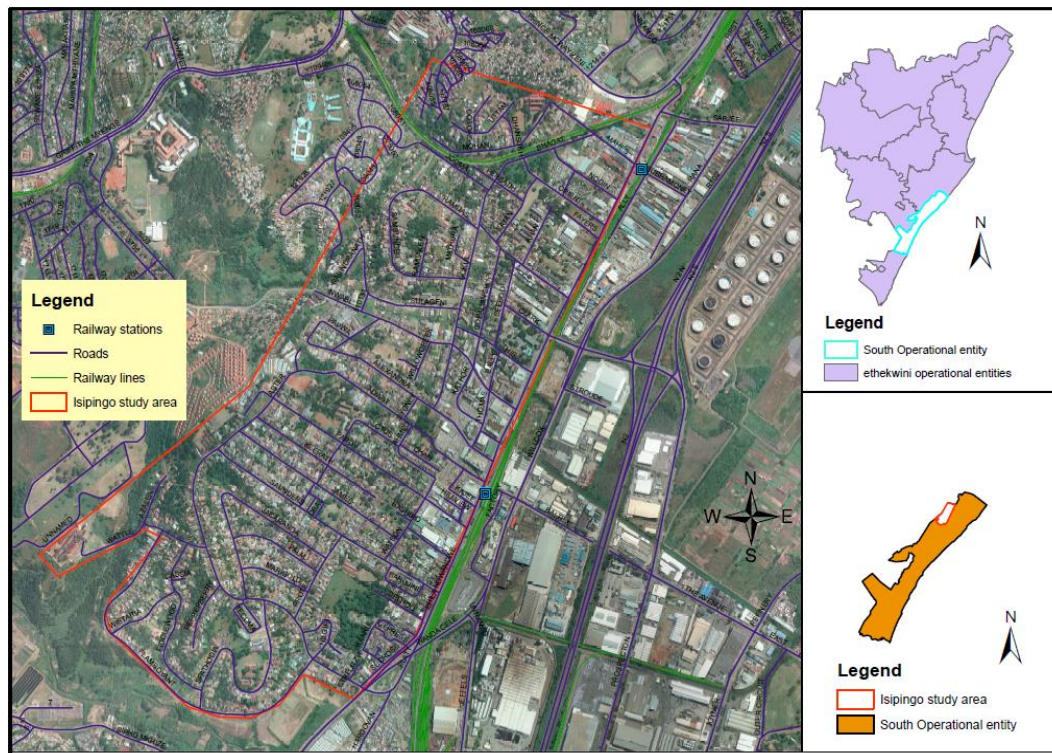


Source: Bhoora (2009)

4.7 Transport network and connectivity

Within eThekweni Municipality, approximately 47% of the residents travel by public transport, that being rail (15%), bus (17%) and taxi (68%). The municipality is fairly well serviced with commuter rail services which comprise of the North-south line following the coastal plain between Umlazi and Isipingo to Bridge City and KwaMashu as well as Circuitous line between Pinetown Central Business District (CBD) and Rossburgh Station (eThekweni Municipality, 2017). The taxi and bus route system provides extensive coverage throughout the municipal area and beyond. There are approximately 1710 unidirectional bus routes which are serviced by approximately 200 operators in a mix of subsidised contracts and unsubsidized services. There are approximately 1673 unidirectional taxi routes, serviced by over 110 taxi associations in the municipal area (eThekweni Municipality, 2017). The study area is highly accessible due to its proximity to the N2 freeway (figure 16) and the fact that Old Main Road crosses through the town centre. Prospecton Road, Jeffels Road, the Avenue East Wilcox Road, and South Coast Road provide access to the large industrial firms in the area (Bhoora, 2009). The transportation systems that are used by the large number of commuters include taxis, buses, and rail, while private motor vehicles still prevail to a large extent. In addition, most commuters from Isipingo and surrounding areas walk to the town centre before using another mode of travel. This is due to the area being a mixed use, therefore close proximity to the Rank, Rail and Bus station is evident. Overall, the public transport system is economically inefficient with many services in direct competition with each other, resulting in unprofitable rail and bus trips (eThekweni Municipality, 2017). Figure 17 below spatially depicts the road network and circulation within the study area, which also shows the sites proximity to major transport routes and the location of railway stations in Isipingo.

Figure 17: Transport network and location of railway stations within the core study area



Source: Author (November 2017)

4.8 Chapter summary

The chapter exemplified the case study within the Isipingo study area and its role within the eThekweni Municipality. The demographic analysis was provided and demonstrated that the area has changed over time, as mentioned above, Isipingo has become an area populated by a mixture of ethnic groups. This was due to the massive influx of people looking to secure job opportunities in order to survive outside the Durban CBD. The chapter also provided the major land-uses within the area, further detailing the mixture of land-uses such as industrial, commercial and residential. It was also illustrated that the public transport system is economically inefficient due to many services competing, resulting in unprofitable rail and bus trips. The chapter aimed to explain the situational analysis of the study area in order to understand the historic and current trends within Isipingo.

Chapter Five: Findings and Analysis

5.0 Introduction

The dissertation is set out to analyse and determine the impact of mixed land-use developments on socio-economic sustainability within Isipingo. The rationale of this chapter is to present the overall results of the research and the analysis of the findings in accordance to the research questions and objectives presented in chapter 1. The chapter consist of mainly three sections. The first section outlines the main factors that influenced the formation of the mixed land-use development situated in Isipingo. This section aims to answer the first objective of the dissertation with insights from the key informants. The second section illustrates the benefits and challenges of the existing mixed land-use development within Isipingo. This will be provided through illustrating the perceptions of the residents living within Isipingo, the business owners including informal traders and the key informants, which are the; municipal and provincial officials as well as a consulting company's perceptions. This section mainly provides the views of the experts and residents based on the interview questions that were derived from the main research questions provided in chapter one. Lastly, the third section presents the extent to which the eThekweni Municipality monitors and sustains the area within Isipingo. This includes past and future plans the municipality has for the area in order to revitalize and improve its current state. In addition, Annexure A provides a summary of answers to each objective and page number of where the objectives of this dissertation were answered. This is to clearly indicate where each objective was answered within the dissertation.

5.1 The main factors that influenced the formation of mixed land-use developments in Isipingo

In order to understand the impacts of mixed land-uses, it is important to understand how such developments form and what factors lead to them occurring. According to (Onyango & Kola, 2015), during the industrial revolution, the development of faster transport modes started encouraging decentralization of many of the urban functions and land uses from the central area to suburbs. Initially, the main land-use in the suburbs was residential, but this started changing with time as they expanded to mixed-uses. Betrand (1981) discovered that the expansion of suburbs led to the emergence of commercial and industrial land-uses in them challenging the former belief that these land-uses decreased from the city centre. Since this

period, suburbs have been increasing with time in various cities of the world. For example, in North America, it is estimated that majority of its cities' residents currently live in suburbs. Along with the rising population in them, many companies have also located their offices and other facilities in the suburbs (Onyango & Kola, 2015). This has resulted in increased population density and continued mix in land-uses.

Within the interview sessions, the public officials were asked to explain the main causes that led to the current spatial structure of Isipingo. This looks at the crucial factors and foundations in which the mixed-use developments formed within the study area. In response, the head of Development Planning Environment and Management from the eThekweni Municipality who has been involved in managing and approving land development in the municipality stipulated that the current land-uses within Isipingo were caused by apartheid planning initiatives, characteristic of unplanned land-uses, forming organically without compliance with a Town Planning Scheme. He further stated that, the population influx control laws were abolished in the mid-1980s which then led to the growth of unplanned developments within the Isipingo CBD. This also led to informal settlements creeping into other surrounding areas since many people desired to work and live in Isipingo. Around the same time, the surrounding areas such as Umlazi and Malukazi became politically turbulent and created uncertainty about security issues and about the future development of Isipingo. It is also acknowledged that by 1994, all racial segregation and apartheid laws were ended following the start of a democratic government in Post-Apartheid South Africa. Numerous reforms and demarcation processes have been undertaken to reverse apartheid planning and administration. In the year 2000, developmental and democratic local government elections occurred and Isipingo was incorporated under a newly formed municipality, eThekweni Municipality.

A Similar response from a Chief Town Planner from KZN COGTA (provincial government) who grew up in Isipingo and who's mandate is to support the eThekweni Municipality to develop land-use schemes and spatial development frameworks, stated that, historically the growth of Isipingo was mostly informal; it was also predominantly an Indian town and people from Umbogintwini, Malukazi, Umbumbulu and Umlazi travelled to Isipingo to do their shopping. Hence, Isipingo became more than just an Indian Town overtime; it became a secondary node to the Durban CBD, purely on the purchasing power it had since a lot of money and people were coming in the area.

5.2 Benefits and challenges of the Mixed land-use developments within Isipingo Study Area

In terms of establishing the key challenges and benefits of the mixed land-use development within Isipingo. The criteria mentioned within the literature review (chapter 3) by the Oregon Transportation and Growth Management programme (TGM) which is used to measure the sustainability of mixed land-uses was used in the context of Isipingo through illustrating the perceptions of the residents that were sampled and interviewed during the data collection phase. The criteria used is namely the satisfaction of residents in terms of; Access to infrastructure services, Access to a range of housing typologies, Access to economic and job opportunities, Access to social and recreational facilities, Access to a range of transportation options, Safety and surveillance. In addition, the perceptions of key informants as well as business owners were also provided and answers were presented as to what challenges and benefits exist within the Isipingo mixed land-use area. The responses were extracted from the semi-structured and in-depth interviews as well as from field observations undertaken within the data collection process.

5.2.1 Perceptions of Residents within Isipingo Study Area

a) Access to infrastructure services

According to Adenle & Mohammed (2016), one of the principles of smart growth includes mixed land-use development and the benefits associated with such developments is the efficient use of infrastructure and services. Which means that generally, mixed-use developments contain infrastructure provision since they are located within bulk infrastructure areas and serviced sites or within the urban edge or urban development line of a municipality. An urban edge or urban development line is the boundary line that marks the end of the availability of infrastructure within a municipal jurisdiction. Therefore, one of the key characteristics of a mixed land-use development is the availability or access to infrastructure service provision. Access to infrastructure services generally means the availability of piped water or water borne sewerage, electricity supply and good tarred roads within a settlement. According to the University of Delaware (2014), zoning areas for mixed-uses lowers infrastructure costs. Construction developments and subdivisions often require costly and redundant municipal infrastructure to function. However, mixed land-use developments do not necessarily require new bulk infrastructure since they are located within serviced sites. These developments utilizing already existing bulk-infrastructure rather than other developments that require new infrastructure provision since they are dispersed from one another.

On interviewing the residents within Isipingo, they were asked whether they have access to infrastructure services such as adequate piped water and electricity supply. The majority of the residents agreed that there are sufficient infrastructure services. One of the interviewed participants mentioned that Isipingo has never experienced and problems regarding water supply as well as electricity provision unless there was a black-out within the city as a whole. However, most of the respondents stated that although there is available infrastructure provision, the infrastructure is ageing and there has been the lack of adequate maintenance. Respondent 4 (Resident) stated that “the Isipingo CBD and surroundings is currently in a poor state; roads are untidy and illegal dumping is rife; damaged infrastructure and an ‘I don’t care attitude’ is prevalent”.

Most of the respondents also complained about the high rate charges of these infrastructure services. A lady who has been staying within Isipingo for 6 years (Respondent 19) expressed her emotions revealing that the rates are too high for an area that is dilapidated and deteriorating like Isipingo. She further mentioned that a person must pay to go to the public toilets within the mixed-use area which ultimately leads to people urinating anywhere. Within the field observations, the researcher was also able to determine the availability of good tarred roads within Isipingo study area. Image 13 below simply depicts the conditions of the roads within the Isipingo study area.

Image 13: Road conditions



Source: Author (November 2017)

It can be noted that the surface of the roads in Isipingo area is poor and paving alongside the roads is non-existent whereas there is no parking. Generally, the respondents were satisfied

with the availability of water and electricity although some issues were raised, it is acknowledged that the Isipingo mixed-use area contains infrastructure services. However, much improvements are needed with respect to roads and space for parking.

b) Access to a range of Housing Typologies

According to Aurand (2010), smart growth and mixed land-uses should provide a range of different housing types to make it possible for senior citizens to stay in their neighborhoods as they age, young people to afford their first home, and families at all stages in between to find a safe, attractive home they can afford. The high quality of life makes these communities economically competitive, creates business opportunities, and strengthens the local tax base. Mixed land-use proponents suggest that the housing needs of low-income households can be better met by neighborhoods of greater density, a greater variety of housing types and mixed land-use than by neighborhoods dominated by only low-density, single-family homes. Therefore, in general, mixed-use developments aim to cater for different income groups, including the elderly, adults and youth.

Access to different housing typologies basically means the ability to access different typologies of housing, such as; detached or row-housing, high rise flats, and single dwelling units which accommodate all socio-economic categories that is; low, middle and high-income groups. During observations on the field, the researcher discovered different typologies of housing. Within the study area, it was noted that Isipingo contains some fairly middle-income detached residential housing, and high-rise flats (see image 14). Residents were asked if the mixed-use area provides housing options. In her response, a lady who has been residing within Isipingo for 4 years expressed that “housing options are there within Isipingo, but it depends on your affordability”. Similarly, a 29 year old man who has been staying for 7 years and currently renting within a block of flats stated that there exist a variety of housing options such as high-rise flats, single dwelling units which also cater for rental accommodation within backyard. However, it was mentioned that although housing options exist, the quality of them are not to standard as supposed to as the rates are so high. Generally, residents were satisfied with the availability of different housing typologies. However, the transient residence (people renting) complained about the amount they are charged by the landlords considering the quality of the flats.

Image 14: Housing Typologies



Source: Author (November 2017).

c) Access to economic and job opportunities

One of the principles and goals of the mixed land-use concept revolves around creating accessibility to economic and job opportunities for residence. Access to economic and job opportunity means; the ability to access or be in close proximity to value chain areas within a city or municipality such as professional offices, mall, manufacturing companies, industrial zones and retail in order to access job opportunities. According to the University of Delaware in partnership with Delaware Department of Transportation (2013), there are numerous economic benefits to adapting planning strategies and land-use practices that foster mixed-use development. Studies show a clear connection between walkable environments and the economic viability of a Town. Mixed-use developments promote a walkable built environment that creates greater economic opportunities for residents and ultimately cuts their transportation costs to work and economic zones. In addition, mixed-use developments can help revitalize a downtown, increase private investment, lead to higher property values, promote tourism and support the development of a good business.

Within the interview process, residences were asked if the mixed land-use area contains adequate economic and job opportunities. Most of the residences stated that Isipingo is blessed with economic and job opportunities such as; the Isipingo prospection including, Toyota SA Motors, industrial zones including South African Breweries, Sapref refinery, Shell Chemicals, Sasol Fibres, and other commercial zones (see image 15). Residents were satisfied for being near job opportunities. However, it was expressed that in order to be employed, one need to be qualified and be skilful, as well as having connections with relevant people to get the job. A man who had been staying in Isipingo for 5 years stated that some of the residents within Isipingo are self-employed (running their own business) and some work in other areas outside

Isipingo such as the Durban CBD, Amanzimtoti, Bluff and other neighbouring areas to Isipingo. Some of the residents also stated that majority of companies in the area hire a lot of people staying outside of Isipingo since there are not much skills locally. In general, respondents were grateful with their location near value chain areas, providing economic opportunities for them. It can be acknowledged that access to economic and job opportunity clearly exists within the area, and can be regarded as an advantage of the mixed-use development in Isipingo.

Image 15: Job opportunity zones in Isipingo



Source: Author (November 2017)

d) Access to Public and recreational facilities

According to Lu (1999), accessibility to public facilities such as clinics and schools determines the level of convenience in life and impacts residential satisfaction. Therefore, the more inhabitants are satisfied with public and social facilities, the more influence on residential satisfaction (Mashazhu, 2016). Mixed land-use developments aim to stimulate the provision of appropriate and accessible social facilities to support the population resident in the area. Thus, as shown in chapter 3, regarding the criteria of mixed-use developments, mixed land-use becomes inadequate if social facilities such as schools, recreational and clinics are not accessible to residence residing within the area (United Nations, 2009).

During the interview process, residents were asked whether they have access to social and recreational facilities. It was noted that residents were generally satisfied with the available social facilities such as schools, clinics, post office etc. However, it was observed that the presence of recreational facilities such as sports fields and parks were non-existent within the study area. This is regarded as a major problem. The availability of recreational facilities within dense areas creates a sense of health and piece. The human body requires spaces such as parks,

gardens and playgrounds to relieve stress and noise from the busy side of the town. The availability of green open spaces also helps the human body to breathe in oxygen released from trees. Therefore, lack of these facilities negatively impacts the psychological well-being of residents. One of the residents interviewed also mentioned that, it is common for children and youths to eventually fall into drug abuse since there are no recreational facilities and career boosting initiatives for them to get involved in the area. Such facilities and initiatives are crucial for any child's development.

e) Access to a range of Transportation options

In terms of the location theory mentioned in chapter 3, mixed land-use developments should be located in areas with great accessibility to major transport routes for the benefit of the business within it and residents. Residents must be able to commute easily and cheaply into and out of their neighbourhood. According to Zamorana & Kupla (2014), mixed-uses promote the networking of high-quality public transport such as trains and buses connecting cities, towns, and neighbourhoods together. Mixed-uses also promote pedestrian-friendly design that encourages a greater use of bicycles, rollerblades, scooters, and walking as daily transportation. In addition, mixed-use, public transit-friendly neighborhoods benefit local economies. They save individuals' money on transportation by reducing the length and the number of everyday trips and eliminating the need for car ownership.

During the data collection process, it was observed that the Isipingo study area is situated directly adjacent to the R102 and in close proximity to the N2 freeway. Therefore, it was noted that Isipingo enjoys high accessibility, hence its prime function as a multi-modal transport node (Bhoora, 2009). During the interviews, residents were questioned whether they can easily access a variety of transport modes from where they reside. Most of the participants mentioned that, the area is dominated by public transport options such as the taxi association, major bus passenger trips are made and rail transportation options. During field observations, the researcher also noticed the availability of choice in terms of public transport options (see image 16 & 17).

Image 16: Bus stops



Image 17: Taxi rank



Source: Author (November 2017)

The residence also mentioned that people staying further from the town centre use private transport and exclude themselves from using taxis, buses or rail mode of transport. Overall, the resident's satisfaction with the level of access to a variety of transport options. Residents were fairly satisfied with access to transport since they could make frequent trips cheaply daily. However, they complained about the way taxi drivers are violent and act as if they own the area. It was mentioned that they park their taxis anywhere, and would constantly make noise unnecessarily.

f) Safety and surveillance

Safety and surveillance in planning is the ability of a city to provide a safe and secure environment for its inhabitants (PWC, 2013). Ofusu (2009) states that the vision of new urbanism and mixed-use developments is recapturing all those great qualities of cities that have been lost in suburban sprawl while avoiding all the negative aspects that have come to be associated with modern cities such as poor quality environments, congestion, crime, and pollution. Mixed land-uses create vibrant spaces lined with shops, restaurants, sidewalk cafes and filled with street life that promotes safety and surveillance. In addition, mixed-use development concept ensures quality of life, taken together these elements add up to a safe and surveillance spaces well worth living, and create places that enrich, uplift, and bring a sense of community for individuals (Landman, 2003). Neighborhood safety creates and fosters a sense of place within community. A sense of safety improves the quality of an area. This is significant in the process of evaluating the quality of the environment and how security impacts on beneficiary satisfaction.

Isipingo is faced with gang violence and high crime rates. Robberies during the night and day are a common phenomenon. In addition, even one of the residents interviewed advised the researcher to be careful as the neighborhood is unsafe. Although a police station is situated within the study area, residents complained on the availability of policemen in crucial moments. An old man who has been staying in the area for over 10 years mentioned that most of the “Pharas” (criminals) reside within the informal settlements further west of the study area and some come from Umlazi which is a neighbouring township to Isipingo. He further stated that they sometimes walk past his house and make racial statements to him. The man also expressed his frustrations on the fact that he as well as his family cannot even take a walk or exercise in the neighborhood due to such high crime.

Although mixed land-use promise sense of community through safety and surveillance of inhabitants since people are situated close to one another, it is not the case within Isipingo study area. This is due to Isipingo’s location near Umlazi Township, which is well known for having high crime and criminals. As a result, these criminals end up invading Isipingo to earn a living through stealing from people. In addition, the existence of informal settlements nearby the Isipingo study area also contributes to the high crime rate since residents staying there ultimately hijack people in order to sustain their families at home. According to Mohit et al. (2010), safety is a key factor that influences household satisfaction, the perception of a neighborhood not being safe results in residents’ dissatisfaction. Within the Isipingo mixed land-use area, it was noted that residents fear crime and these feelings have negatively affected their perceptions of their levels of personal safety.

5.2.2 Perception of Municipal officials and Private Sector

The public officials and private sector seem to share similar perspectives on the Isipingo study area based on their involvement in current revitalization initiatives. A common perception they share is that Isipingo has the potential and advantages to become a vibrant secondary mixed-use node to the Durban CBD. However, the area appears to be facing many planning challenges mainly caused by apartheid planning. In terms of the challenges of the mixed-use area in Isipingo, the Director of planning working for Iyer Urban Design consulting company provided responses based on his experience. As a Director of Planning, he deals with developing and writing the scheme controls to provide sufficient guidance to the eThekweni Municipality in the execution of projects. He has also been involved in numerous mixed-use development projects both locally and internationally such as the Bridge City Development, Cornubia Town Centre, Isipingo Development Project, Point Waterfront Development, and Projects in

Ekurhuleni, Botswana and Mauritius. He illustrated that, Isipingo has degraded buildings and the public realm has been neglected. There has been limited response and control to the burgeoning informal traders and taxis who have dominated Isipingo Town Centre. Some of the key planning issues are;

- ❖ The predominant land-use is residential on the boundary of the town and mixed-use within the Town Centre but predominantly in private land ownership, the dominant private land ownership in the Town Centre has made it hard for the municipality to invest and revitalize the area.
- ❖ The Isipingo mixed-use area is facing challenges of incompatible land-uses creeping into the residential areas. The area has also become a transport hub for the neighboring communities which further exacerbates the congestion challenges of people and vehicles.
- ❖ Insufficient space is made for parking.
- ❖ Business and industry conflict with residential use at various points.
- ❖ Poor road surface and lack of urban management and maintenance.
- ❖ Poor connection to the rail.

In addition to the challenges, the eThekweni municipal officials also stated that, the area is characteristic of high crime particularly within the CBD. The mix of land-uses creeping into areas not intended such as industrial uses in residential areas contribute to lack of cleanliness and is translated to lawlessness where people have no regard of the law. In addition, there are a lot of social ills such as drug addicts and homeless people. Social ills are due to a number of reasons which some might be attributed to perceived economic opportunities in secondary towns such as Isipingo. The prevalence of homeless people and “woonga” (drug) addicts in the area result in the high levels of crime.

The key informants were also asked to explain the benefits of the Isipingo mixed land-use area based on their experience. The private sector consultant stated that the mixed-uses within Isipingo offer diversity and a unique offering which has contributed in some part to the economic growth within eThekweni. In addition, the eThekweni municipal officials mentioned that the industrial areas have grown over the years which is likely to have impacted positively on the economic growth of the city and revenue. It was also illustrated that Isipingo mixed-use area contains the aspect of live, work and play. There are job opportunities nearby and public

transport system that are ideal to promote Transit Oriented Development (TOD) which is a priority for the city in promoting efficiencies in urban development.

5.2.3 Perception of informal traders and Business owners

Informal traders and business owners residing in the area provided adequate data with respect to the opportunities and problems being experienced within the area which could hinder further development as well as the potential of the area to be more vibrant. During the interview sessions with them, they were asked to explain the main factors and driving forces for their business to reside in the area. This question was crucial, since it determines the factors that generally attract business to certain areas, thus increasing the functionality of mixed land-use areas. In their responses, the business owners specified that areas that containing large population levels ultimately become a target for business owners. Isipingo is perceived to have large volumes of people within the mixed-use area, not only from Isipingo, but from neighboring towns as well, seeking to either shop, meet, work or for entertainment purposes. The business owners and informal traders use that as an opportunity to invest within that location because people would be in close proximity to be able to look and buy their products or access their service. The business owners also stated that they saw Isipingo as a growing secondary town to the Durban CBD, therefore identifying the potential for it to grow and attract more people which would eventually benefit their business. The informal traders were however dissatisfied with the amount of space available and agricultural land to produce products that would be used for their business to operate. They mentioned that, the market is competitive and there is insufficient space available to start or expand a business within the study area. In addition, issues of congestion and pollution has led to some businesses leaving the area.

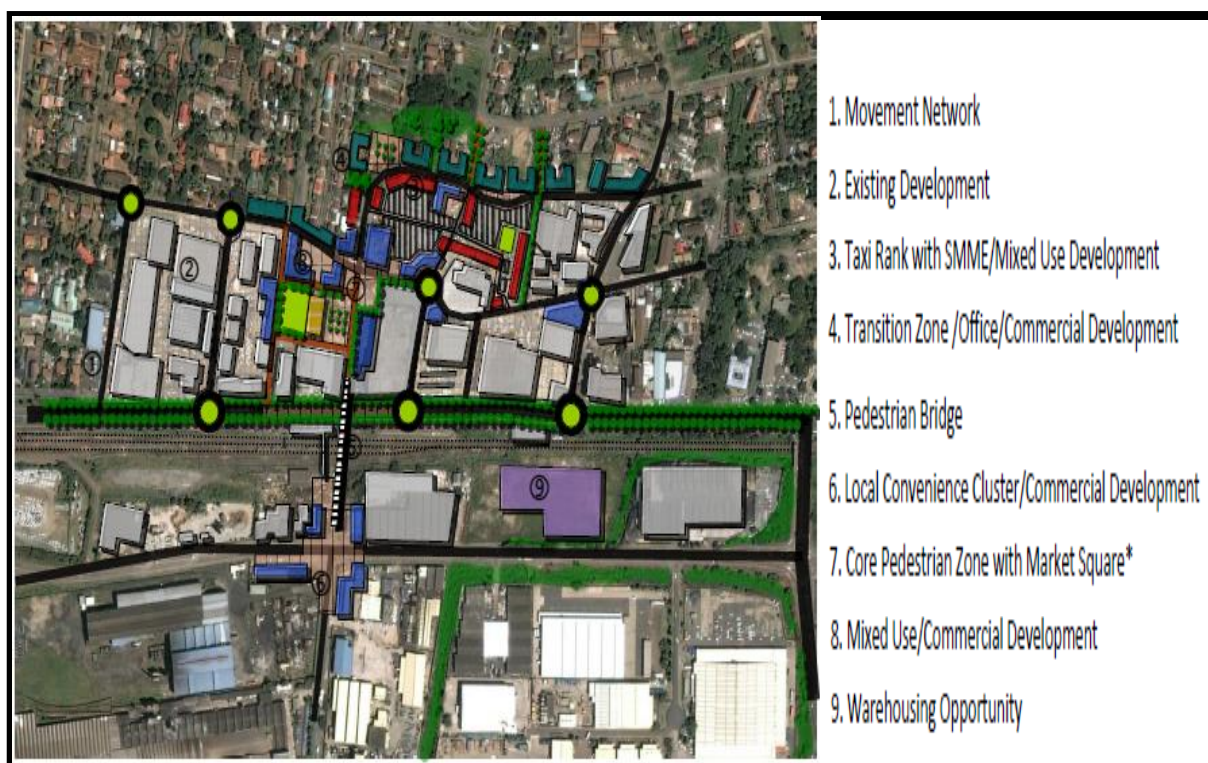
5.3 Extent to which the eThekweni Municipality is monitoring and sustaining the area in Isipingo

Based on the interview sessions with the key informants, particularly the eThekweni officials, and Iyer Urban Design Consulting Company, it was acknowledged that the South Durban Basin particularly in Isipingo, has been an area of much contention over the past century, primarily because of the mix of heavy industry and residential uses. Many planning initiatives have been undertaken in the past decades in order to address such issues within Isipingo. However, there has still been increasing concerns from the residents about the declining condition and poor maintenance within Isipingo.

5.3.1 The Isipingo Development Framework Plan of 2008

In 2008, IYER Urban Design Studio was appointed by the eThekweni Municipality to provide professional services to undertake a Development Framework Plan for Isipingo. The intention of the project was to develop a strategy to address the urban decay and the economic decline that had taken place within the historical Isipingo Town Centre. The Development Framework Plan was required to inform and coordinate the upgrading and redevelopment of the Isipingo Town Centre, and importantly its role in the wider eThekweni Municipality and region. The strategic focus was to, restore business confidence, consolidate existing and stimulate new development. The focus was also to facilitate renewed socio-economic investment and improve the quality of life within the area. The Framework Plan was not intended to serve as a Local Area Plan (LAP), but to provide detailed guidance for the area until such time that an LAP is to be developed and approved by council. Figure 18 below depicts the Spatial Concept of the Framework Plan.

Figure 18: 2008-2009 Isipingo Framework Plan



Source: Iyer Urban Design (2008)

The plan looked at restructuring movement within the town centre, providing for a central open space, formalising taxi ranks and illustrating how the public realm could be improved within the town centre. Figure 19 below illustrates the corridors of connection that were proposed for

the renewal of Isipingo, which were important structuring elements of growth. The plan also focused on stitching the urban fabric through new east and west linkages that offer choice and to link to the urban periphery. The corridors (lines of connection) also aimed to create new city routes that would allow for a diverse array of movement systems including rail.

Figure 19: Structuring Elements of Framework Plan



Source: Iyer Urban Design Studio (2008)

However, the Director of Planning from Iyer (Consulting Company) mentioned that the implementation of the plan had issues regarding land ownership. In addition, some of the strategies of the plan were not implemented since much of the funding for the project were removed from the planning phase and further distributed to the engineering phase mainly for the construction of infrastructure which was very expensive. Therefore, the desired objectives of the plan were not met due to funding being decreased.

5.3.2 Urban Regeneration Initiatives in Isipingo

The Head of Development Planning Environment and Management from the eThekweni Municipality mentioned that, the town is currently faced with the challenge of the congested space, which then leads to informal traders using the side walk for conducting businesses, disposing of waste materials and storing equipment. Other challenges are crime, illegal scrapyards, illegal dumping, illegal mechanics, influx of taxis, poor service delivery, poor economic growth and ageing infrastructure.

As a result of this, Isipingo has become a focus area for regeneration and an active Strategic Urban Management Forum (UMF) was established and given the task by the eThekweni City Manager to implement action plans for the CBD. As a pilot project, the municipality undertook to upgrade the Isipingo mixed-use area and has been identified as an area that is in urgent need of renewal and management. A multi-disciplinary committee consisting of numerous units was established to ensure that a holistic approach to the upgrade is taken. In order to ensure the efficient and effective functioning of the Urban Management Forum, the Area Based Management (ABM) team unit together with relevant departments signed Service Level Agreements (SLAs) to establish roles and responsibilities as well as agreed on service delivery standards (SDB Area Base Management Team, 2014). The SLAs would assist in providing creative solutions, innovation and a holistic stakeholder engagement process for the revitalization of the mixed-use area. The UMF consists of seven work streams, namely; operations, bad buildings, informal traders, public transport, land-use, crime and drugs, informal settlements and stakeholder engagement. These efforts have resulted in the implementation of a number of interventions such as clean up campaigns, enforcement of bylaws and site inspections. However, in terms of progress regarding these initiatives, the interventions have not been sustainable and there has been minimal improvement.

According to the eThekweni Municipality 17/18 Spatial Development Framework (2017), the municipality's vision is to be Africa's most caring and liveable city. In order to achieve this vision, the municipality is currently undertaking a programme to renew the eThekweni CBD areas, including the Isipingo CBD by ensuring that they are conducive to living, working, praying, playing and doing business. The municipality is aiming to upgrade the public realm and manage it in an integrated manner through the enforcement of bylaws, cleansing, maintenance, informal trader management and reconfiguring the public space to accommodate the complex number of users. To achieve the vision, the city also needs the cooperation of all its citizens. The upgrade is expected to cost around R460-million, funded jointly by the eThekweni Municipality and National Treasury. The key objectives of the regeneration plan of Isipingo is namely; to restore, renew and transform Isipingo into an efficient, vibrant, functional, socio economic hub that is environmentally sustainable, to inspire communities, encourage a change in behaviour and encourage business confidence in the town. To ensure adherence to enforceable bylaws and relevant legislation as well as ensure that activities are compatible with relevant land-uses. Figure 19 below spatially depicts the vision of how the regeneration project will look like. The project will cover 6 999sq/m including the upgrading

of trading facilities and a multi-purpose centre that will provide retail and office facilities, public parking and a new taxi rank (see figure 20). In addition to municipal offices, the four-storey Isipingo junction will house the Departments of Labour, Home Affairs, Housing, the Post Office, SASSA offices, and facilities for SMME retailers (eThekweni municipality, 2015).

Figure 20: Vision of Isipingo regeneration project



Source: SDB Area Based Management Team (2015)

The three-phase project began in 2012 and is on track for completion by 2018. Thus far, R30-million has been spent on the project with infrastructure taking up the chunk of the budget. Developments in the town centre will also include pedestrian walkways, paved sidewalks (see figure 19), new roads and 25 new parking bays to cater for the expected influx. The upgrades will have new and modern sheltered sites to accommodate 233 traders (eThekweni municipality, 2015).

According to the eThekweni Municipal IDP (2017), the Isipingo Local Area Plan (LAP), Functional Area Plan (FAP) and reviewed Land-Use Management Scheme (LUMS) are currently underway. The project team has concluded the following phases; Inception, Statue

Quo/Situational Analysis, Development Concept and Infrastructure Implication. It is expected to be concluded by the end of June 2018 (eThekweni Municipality, 2017).

5.4 Chapter Summary

The aim of this chapter was to analyse the research findings according to the research objectives presented in chapter 1 to determine the impact of mixed land-use developments on the socio-economic sustainability in Isipingo. The results and their analysis indicate that the mixed land-use development within Isipingo formed informally as a result of increased influx of people from neighbouring towns seeking to earn a living. This happened following the abolishment of the influx control laws in the mid-1980s, ultimately leading to the growth of unplanned developments within the Isipingo CBD. In terms of the benefits and challenges of the mixed-use area in Isipingo, the perceptions of residents illustrated that the challenges associated with these developments dominated and over-power the benefits. The criteria that was used to measure the sustainability of mixed-use development in Isipingo which stipulated that residents were fairly satisfied with convenience to economic opportunities, however, in terms of comfort such as safety, health and piece, residents were dissatisfied. From the interviews conducted, it became apparent that the city officials, private consultants, and businessmen in particular, see great potential in renewing the Isipingo area. Lastly, it can be acknowledged that the eThekweni Municipality has fairly attempted to monitor and sustain the mixed land-use development within Isipingo, and various revitalization initiatives were undertaken and still are being conducted to improve the current state of the area.

Chapter Six: Conclusion and Recommendations

6.0 Introduction

This chapter presents the final conclusions drawn and recommendations in response to the research findings illustrated in chapter 5. The chapter consists of three sections, the first section presents a summary of the main research findings which address the objectives set for this study. The second section outlines the recommendations on addressing and managing the issues associated with such developments. Lastly, the third section provides conclusions through illustrating the outcomes and lessons learnt regarding the sustainability of mixed land-use developments in Isipingo.

6.1 Summary of Findings

The study was set out to critically assess the impact of the mixed land-use developments on socio-economic sustainability within Isipingo. This was conducted through examining the main factors that led to the formation of these mixed-use developments, the benefits and challenges associated with such developments and the extent to which the eThekweni Municipality monitors and sustains the Isipingo mixed-use area.

With regards to factors which led to the formation of the mixed use developments in the study area, the main findings collected for this study clearly showed that, the mixed land use developments in Isipingo formed organically as a result of the abolishment of population influx control policies within the apartheid era. Large amounts of people migrated to Isipingo, ultimately leading to developments occurring without proper planning and consideration of the environment. Inhabitants from neighboring Townships invaded Isipingo since it was perceived as a secondary node with the Durban CBD and many activities were occurring in the Town. Residents therefore, saw the economic opportunities Isipingo had, eventually residing in close proximity to commercial and industrial areas. Over the years, population increased within the Town and informal business started occurring along the sidewalks of within the dense area. Eventually, mixed land use developments formed in the Town, characteristic of incompatible land uses integrated together, such as the mix of residential and industrial uses.

With regards to the benefits of the mixed land-use developments within Isipingo, the findings of this research revealed that these developments are well within the municipal urban development line. This means that the area contains basic services such as piped water borne sewerage, electricity supply and availability of tarred roads, although residents complained

about ageing infrastructure and conditions of roads, it was acknowledged that the area encompasses infrastructure services. The interviews with key informants and residents also revealed that the mixture of residential and commercial provides economic opportunities for residents. People were satisfied with the amount of choice they have with regards to getting a job. Although residents stressed on the level of high competition for jobs within the area due to large amounts of people within and outside Isipingo seeking for employment within the area, it was recognized that access to economic and job opportunities exist within Isipingo. Another benefit the mixed land-use development provides is housing choice for residents. It was observed that the area is comprised with a variety of housing options which accommodate all socio-economic categories which are; low, middle and high-income groups. In addition to the benefits, the data collection undertaken revealed that residents also have choice in terms of accessing different modes of transport. The area is dominated by public transport options such as taxi, rail and major bus passenger trips are made at a cheap price. It was also revealed that Isipingo offers diversity and a unique offering which has contributed in some part to the economic growth within eThekweni. The industrial and commercial areas have grown over the years which is likely to have impacted positively on the economic growth of the city and revenue.

Nevertheless, there were however numerous challenges identified during the data collection process which are associated with the mixed land-use developments in Isipingo. The field observations revealed that Isipingo study area has dilapidated buildings and the public realm has been neglected. This was caused by the increase of incompatible land-uses creeping into the residential areas over time. It was acknowledged that business and industry conflict with residential use at various points. The individual interviews with residents revealed that, people were not comfortable residing near the polluting industries. In addition, the mixing of land-uses led to congestion challenges of people and vehicles, insufficient space was made for parking and green open spaces. The lack of recreational facilities such as sports grounds and community parks negatively affected the well-being of inhabitants of Isipingo. In addition, the study revealed that the area is characteristic of high crime particularly within the CBD. The business owners also disgruntled with the amount of space available for business to operate. The existence of air, land and noise pollution has also contributed to some businesses leaving the area. In general, it was acknowledged that the mixed land-use developments had fairly positive impacts to certain extent; however, the negatives and challenges of them outweighed the benefits.

The eThekweni Municipality has fairly attempted to address and revitalize the state of Isipingo. Various planning initiatives such as the Isipingo Development Framework Plan of 2008 which aimed at providing a framework to pave the way for more detailed planning initiatives including Local Area Plans and precinct plans, however sufficient funding was not available to implement such plans. The current urban regeneration initiatives have also aimed at rejuvenating the character of the Isipingo study area. These initiatives have resulted in the implementation of a number of interventions such as enforcement of bylaws, clean up campaigns, and site inspections. However, the interventions have not been sustainable and there has been minimal improvement. The municipality is currently embarking on an urban renewal project that will attempt to redress socio-economic challenges faced by Isipingo residents and create a sustainable, vibrant and accessible environment for people within Isipingo through alignment with the 2030 municipal vision of the city.

6.2 Recommendations

6.2.1 Enforcement of Land-Use Management Scheme

The current planning challenges experienced within Isipingo are due to organic growth of the town without proper planning tools aligned with a particular vision. As a response, the enforcement of a land-use scheme will provide better planning for mixed land-uses through better land-use monitoring and management. A land-use management scheme is a planning legislative tool that consists of regulations, land-use zones, and building control measures to be undertaken within a specific municipality. It basically controls land development in a particular area and prohibits certain land-uses in certain areas. Section 24 of the Spatial Planning and Land-Use Management Act of 2013 specifies that a municipality must, after public consultation, adopt and approve a single land-use scheme for its entire area within five years from the commencement of this act (Republic of South Africa, 2013). The area within Isipingo is yet to be covered by a land-use scheme. Therefore, enforcement of a Land-Use Scheme will enable the comprehensive land-use management of all erven including private and state-owned land within the municipality. In addition, it will promote and implement the applicable planning and development legislation and principles as adopted by the relevant national, provincial and local spheres of government from time to time. The study revealed that insufficient space was available to accommodate parking, open space and recreational facilities. The land-use scheme therefore will ensure efficient land-use management through providing order and shortened land-use procedures within the area. The land-use will also manage urban growth, development and conservation of the natural environment in order to

achieve co-ordinated and harmonious development in a way that will efficiently promote public safety, health, order, convenience and to protect the general welfare of the inhabitants of Isipingo. Lastly, it will promote and implement the vision and strategies of the eThekweni Integrated Development Plan and Spatial Development Framework in the realization of quality environments and increasing the potential of the area.

6.2.2 Urban regeneration and Rezoning initiatives

According to the Royal Town Planning Institute (2014), urban regeneration is the attempt to reverse that decline of an area by both improving the physical structure and more importantly and elusively, the economy of those areas. As mentioned within the challenges, some land-uses within the study area conflict with each other at various points and are incompatible such as residential and industrial. It was also observed that some of the buildings are dilapidating due to misuse of sites and pollution. However, the rezoning of certain uses such as residential to commercial may increase the effectiveness and functionality of the area. The study area requires sufficient upgrading and rezoning residential deteriorating buildings into commercial buildings, will restructure the area and attract more investors to bring in businesses to operate within the former residential spaces. This will ultimately lead to the upgrading of the dilapidated structures and promote a vibrant town centre. In addition, residential space should be rezoned into the surrounding area of the town centre and further away from industries. This means that the mixture of commercial and industry should be promoted along with the mixture of residential and commercial; however, the mixture of industry and residential should be prohibited.

6.4 Conclusion

The main research findings of the study reveal that the mixed land use developments in Isipingo contain both positive and negative impacts on socio-economic sustainability. The negative impacts however outweighed the positive impacts. The key informants, as well as residence emphasized more on the challenges experienced on the ground rather than the benefits. The mixed land use developments within Isipingo offer a variety of economic opportunities, transportation options and housing choice for residence, however residence were still uncomfortable and felt unsettled due to crime, pollution and the overall nature of the environment. It was acknowledged that safety, health and comfort seem to be the most important aspects of human well-being, and the lack of such critical aspects were existent within Isipingo study area. The urban structure and public realm do not adequately support present development. These developments in Isipingo grew informally and organically,

therefore it is not to say that Mixed use developments are naturally harmful and unsustainable, however the sustainability of such developments are related to the manner in which they are planned and maintained. Mixed use developments are largely promoted globally and nationally and have worked well if planned for. The case studies of Eastern Docklands in Netherlands and Florida mixed use precinct in Durban clearly show that these developments work in some areas, if they are adequately planned for. Therefore the researcher concludes by stressing the need for these developments to be properly planned for and monitored thoroughly through land use management schemes and urban management tools. In addition, there needs to be a balance achieved between economic benefits, social well-being, environmental protection, culture and spatial justice. The eThekweni municipality is undertaking a process to renew urban areas, making them safe public spaces and attractive to investment, therefore this promotes better planning and could revitalize the current state of Isipingo.

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APPENDIXES

APPENDIX A: Indication of Research findings.

Research Objectives	Main Research Findings
1.) To determine the main factors that influenced the formation of the mixed land-use area in Isipingo.	The Isipingo mixed land use area formed organically and unplanned, due to apartheid initiatives. According to an eThekweni municipal planning head of department, in the mid-1980s, the population influx control laws were abolished and led to the growth of unplanned developments. Overtime more people from neighboring towns saw the potential of economic opportunities Isipingo had and therefore invaded the town leading to residential land uses creeping into Industrial and Commercial zones. (Pg. 66-67).
2.) To identify the challenges associated with the mixed-use developments in Isipingo.	The main challenges associated with the mixed land use developments within Isipingo, is the incompatible land uses such as industrial and residential, which have led to noise, air and land pollution, ultimately neglecting the public realm of the area. The growth of these developments has also led to the challenges of congestion of people and vehicles. Residents were also unsettled within Isipingo due to the high crime rate which has eventually negatively impacted the perceptions of their personal safety and standards of living. (Pg. 69, 72, 74, 75,76)
3.) To identify the benefits related to the mixed-use development in Isipingo.	The key informants and residents had a similar perception regarding the economic opportunities brought by the mixed land uses in Isipingo. Residents were satisfied with the availability of economic and job opportunity zones in close proximity to them. In addition, the industrial areas have grown over the years and have impacted positively on the

	<p>economic growth of the city and revenue. The study also revealed that the mixed land uses also offer diversity through the existence of different housing typologies catering for all income groups. Furthermore, the mixed land-uses offer a variety of transport options, residence are able to commute easily and cheaply through bus, rail and taxis. (Pg. 70, 71, 73, 76)</p>
<p>4.) To examine the extent to which the eThekwini municipality monitors and sustains the area in Isipingo.</p>	<p>The eThekwini municipality has fairly taken measures in revitalizing the state of Isipingo. Various planning initiatives such as the Isipingo Development Framework Plan of 2008 were initiated in order to pave the way for more detailed planning including, Local area Plans and precinct plans, however sufficient funding was not available to implement such plans. In addition, the current urban regeneration initiatives have also aimed at rejuvenating the character of the Isipingo study area. These initiatives have resulted in the implementation of a number of interventions such as enforcement of bylaws, clean up campaigns, and site inspections. However, there has been minimal improvement, due to the poor co-operation amongst stakeholders. (Pg. 78, 79, 80)</p>



APPENDIX B
RESIDENTS WITHIN ISIPINGO STUDY AREA
SEMI-STRUCTURED INTERVIEW QUESTIONS

1. How do you feel about living in Isipingo?
2. Do you have easy access to public facilities (e.g. clinic, shops, school, etc.) Within Isipingo?
3. Is there access to basic service delivery, such as piped water supply and electricity within Isipingo?
4. How dependent are you on Isipingo for your transport?
5. Are there sufficient job opportunities in Isipingo?
6. Do you live, work or shop in Isipingo?
7. Have you noticed any changes within Isipingo, since you started staying there?
8. How safe is it to live in Isipingo?
9. Are you experiencing, noise, land or air pollution?
10. Do you have Housing choice within Isipingo?
11. Do you think it's necessary to make changes to Isipingo?
12. What interventions or improvements to the area will be beneficial to you as a Resident?



APPENDIX C
KEY INFORMANTS
PUBLIC OFFICIALS
IN-DEPTH INTERVIEW QUESTIONS

1. What is your responsibility as a Public official with regards to urban land use change and management within eThekweni Municipality?
2. What is your general understanding and perception of the current spatial structure of Isipingo?
3. What are the planning challenges experienced within Isipingo? What are the causes of these challenges?
4. What planning interventions are necessary, if any, to revitalize the area and Make it function more sustainably?
5. Is Local economic development (LED) being encourage in Isipingo?
6. Do you think that Isipingo has the potential to attract private investment within the area?
7. What are some of the social problems that people encounter when living within a mixed-use area like Isipingo?
8. What are the advantages of living within a mixed-use area like Isipingo?
9. Has the mixing on land-uses in Isipingo contributed to Economic growth within the eThekweni municipality? If yes, how?
10. What are the general challenges associated with mixed land-use developments in a developing country like South Africa?



APPENDIX D
KEY INFORMANTS
PRIVATE SECTOR/CONSULTANTS
IN-DEPTH INTERVIEW QUESTIONS

1. What is your responsibility with regards to urban land use change and management? And what development projects have you been involved in within the development of Isipingo?
2. What is your general understanding and perception of the current spatial structure of Isipingo?
3. Is Isipingo adequately performing the functions expected of a mixed-use development?
4. What initiatives have been taken to revitalize the town thus far?
5. What planning interventions are necessary, if any, to revitalize the area and Make it function more effectively?
6. Is the concept of mixed land-use development applicable in every area? If not which areas are suitable for these types of development?
7. Do you think that Isipingo has the potential to attract private investment within the area?
8. What were some of the social problems that people encounter in a mixed-use area like Isipingo?
9. Has the mixing on land-uses in Isipingo contributed to Economic growth within the eThekweni municipality? If yes, how?
10. What are the general challenges associated with mixed land-use developments in a developing country like South Africa?



APPENDIX E BUSINESS OWNERS

IN-DEPTH INTERVIEW QUESTIONS

1. How long has your business functioned within the area?

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2. What was the main driving force for your business to reside in this area?

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.....

3. Are there restrictions for businesses or development within the area and is there any potential for development in the area?

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.....

4. Is there enormous competition amongst the businesses within the area?

.....

.....

5. Are the Businesses prospering within Isipingo? Or are they leaving the area?

.....

.....

6. What interventions could be necessary, if any, to revitalize the area and make it attractive more businesses within the area?

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APPENDIX F: Checklist for Field Observations

Observation	Day 1	Day 2	Day 3	Day 4	Day 5
1. Observation of LED in the area					
2. Observation of available infrastructure					
3. Observation of existing housing typologies.					
4. Observation of pollution (e.g. Air, noise & Land)					
5. Observation of available Public facilities					
6. Observation of transport methods in the area.					
7. Observation of settlement patterns in the area					
8. Observation of crime & safety in the area					
9. Observation of population Density in the area.					